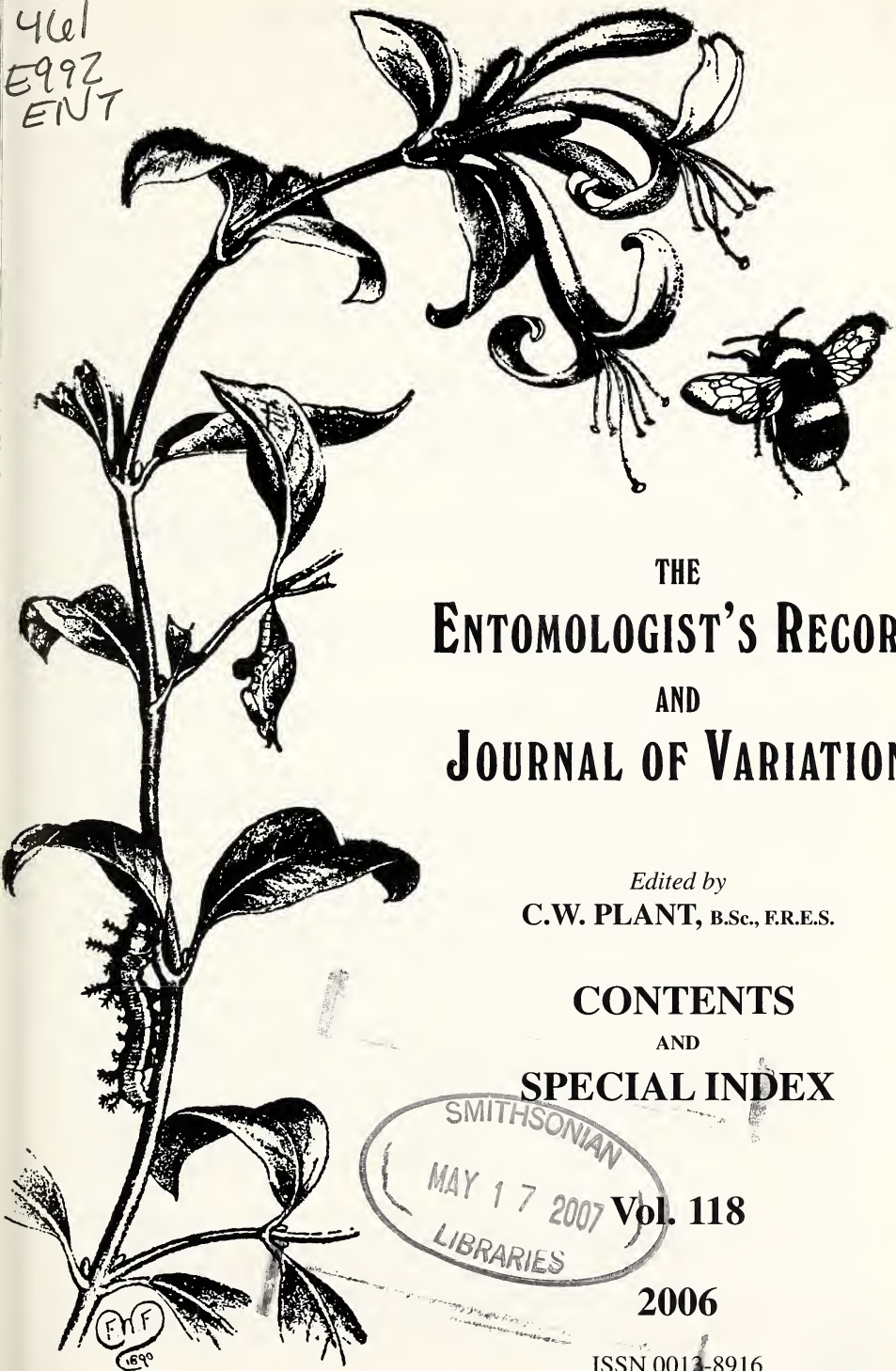

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Edited by
C.W. PLANT, B.Sc., F.R.E.S.

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Editor

C.W. PLANT, B.Sc., F.R.E.S.

14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

Registrar

R.F. McCormick, F.R.E.S.

36 Paradise Road,
Teignmouth, Devon TQ14 8NR

Treasurer

C.C. Penney, F.R.E.S.

109 Waveney Drive, Springfield,
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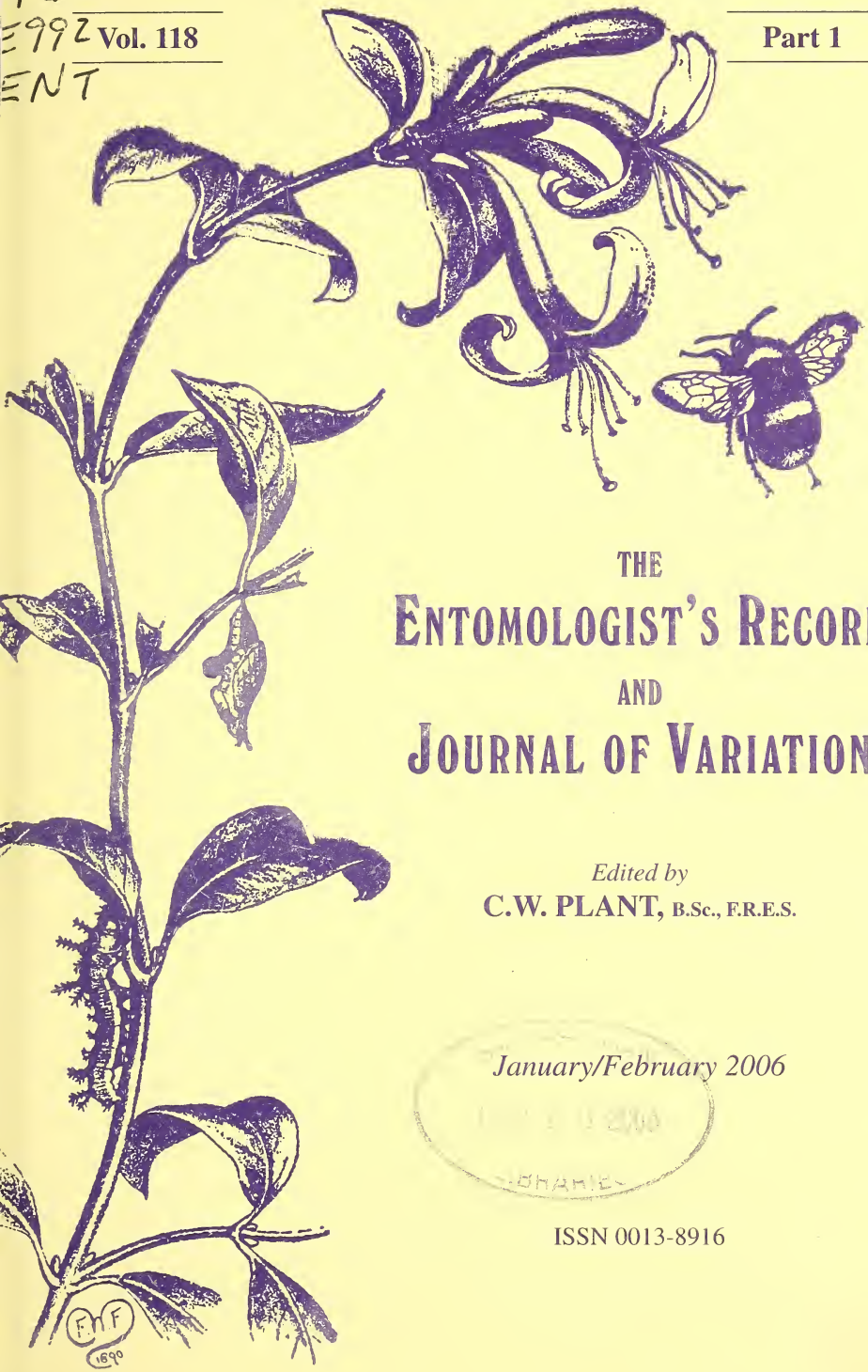

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THE VALUE OF SWEET CHESTNUT *CASTANEA SATIVA* AS A FOODPLANT FOR LEPIDOPTERA

[1] Mark S. Parsons and [2] Nick Greatorex-Davies

[1] *Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP*

[2] *Centre for Ecology and Hydrology, Monks Wood, Abbots Ripton, Huntingdon, Cambridgeshire PE28 2LS*

Abstract

Sweet Chestnut is a non-native tree in Britain and is considered to have a low biodiversity value. However, over seventy species of Lepidoptera have now been recorded utilizing Sweet Chestnut as a foodplant, demonstrating it to be an under-valued and important hostplant.

Introduction

Sweet Chestnut *Castanea sativa* is a historic, but not native member of our flora (Rackham, 1986) and was probably introduced by the Romans (Preston, Pearman & Dines, 2002). By the Middle Ages it was known to be a tree of woodlands and generally associated with oak *Quercus* spp. and Beech *Fagus sylvatica*. From the late seventeenth century onwards, and especially in the nineteenth century, Sweet Chestnut woods were planted, particularly in south-east England, as a source of poles, such as those used by hop growers. Now it is a significant constituent of coppiced woodland in south-east England and is also planted in hedgerows, wood borders, parkland and amenity areas and in large gardens. Preston, Pearman & Dines (*loc. cit.*) attribute a large, comparatively recent, increase in records to improved recording and continued planting. It is now widely distributed over the southern half of England and Wales, becoming more thinly distributed in northern England and Scotland. By 2004 there were 12,000ha of Sweet Chestnut in England, 1000ha in Wales with none in Scotland (Forestry Statistics, 2004, Economics and Statistics Division, Forestry Commission, Edinburgh).

Sweet Chestnut has generally been considered of little interest to lepidopterists and has been thought to be of little significance as a hostplant, for example Kennedy & Southwood (1984) cite 11 species of phytophagous insect, nine of these Lepidoptera, associated with Sweet Chestnut. Young (1997) suggests that there is an expectation that native species should have more herbivores than non-natives and that this is generally the case, although this difference is not always as marked as would be expected. Young (*loc. cit.*) gives the number of moth species feeding on Sweet Chestnut as ten and suggests that this tree has the fewest number of species associated with it other than Holly *Ilex aquifolium* and Yew *Taxus baccata*. In the light of recent publications and additional studies it is now timely to review this concept.

Sources of data

i. Exotic broadleaved trees study by R.C. Welch and N. Greatorex-Davies

During the years 1979 to 1983 a study of the phytophagous insect fauna of a selection exotic tree species and related native tree species was carried out in

southern England (Welch & Greatorex-Davies, 1993). The purpose of the study was to investigate the colonising fauna of these trees and the potential for insect pests should the trees become more widely planted. Initially the study focused on species of the southern hemisphere genus *Nothofagus*, collectively known as southern beech. Other species of Fagaceae were sampled for comparison including oak, Beech and Sweet Chestnut. The latter was first sampled in 1980, but these occurred in mixed stands and undoubtedly some of the Lepidoptera in the samples were contaminants from adjacent oak and Beech so these data are not considered here.

In 1981 several sites in southern England were selected where Sweet Chestnut grew in more or less pure stands. The sites were Challock Forest in Kent, Forty Acre Wood near Billericay in Essex, and Yorkley Slade and Clanna Woods in the Forest of Dean. Some additional sampling was also undertaken in 1982. At each site the lower branches of Sweet Chestnut were sampled for insects, using a standard Bignell beating tray, in late May/June and again in September. Branches sampled were those low enough to be reached from the ground or from a small stepladder. Each sample consisted of 25 sub-samples. Species and numbers of insects that fell onto the beating tray were recorded or retained for later identification.

Lepidoptera larvae were retained and reared on Sweet Chestnut both to confirm identity where necessary and to observe whether they fed on the leaves and subsequently successfully produced adult moths. Some larvae were almost full-grown when collected and for these it was assumed that they had successfully reached that stage feeding on Sweet Chestnut. Larvae found under the bark of dead branches of Sweet Chestnut at Yorkley Slade were also reared.

ii. The Waved Carpet *Hydrelia sylvata* (Denis & Schiffermüller) study

As part of the UK Biodiversity Action Plan, Butterfly Conservation was given Lead Partner status for the majority of the moths, including the Waved Carpet *Hydrelia sylvata*. The broad objectives of the plan for this species are to maintain its range and to enhance the overall population size in each occupied area. These objectives are to be met through encouraging appropriate woodland management (UK Biodiversity Group 1999). This required investigation into coppice management and habitat suitability.

In 2000, Forest Research provided contributory funding to examine the autecology and habitat preferences of the Waved Carpet, funding which was continued until 2003. Further study was also undertaken by Butterfly Conservation staff in 2004. By 2002, Rewell Wood, West Sussex, had been identified as a key site to study this species in a coppice environment, due to a high local population of the moth, a large, well and regularly managed Sweet Chestnut coppice, with coppice blocks of almost pure Sweet Chestnut, and a well documented management history.

West (1983) reports finding larvae of the Waved Carpet on Sweet Chestnut in Kent. Given the high populations of the moth at Rewell Wood around the Sweet

Chestnut coppice, for example nearly 70 were recorded over two nights in 2001 (Clancy, 2002), it was considered highly probable that the larvae were feeding predominantly on this tree. In order to determine its larval requirements, searches were conducted for larvae feeding on Sweet Chestnut. In addition to active searching for larvae, a standard Bignell beating tray was used. All larvae found feeding on Sweet Chestnut were identified and recorded. These larval searches were undertaken by MSP, Sean Clancy, Susan Clarke, Tony Davis and David Green and reported in Clarke (2004).

iii. Other sources

Recent literature sources were trawled for species associated with Sweet Chestnut. These were Emmet (1988), Waring, Townsend & Lewington (2003) and Emmet & Langmaid (2002). A few lepidopterists were also contacted and asked for further data.

NOTE: *Caloptilia leucapennella* is given in Clarke (2004): This species was a transcription error and should have been *Bucculatrix demaryella* (D. Green, pers. comm.). The case of *Taleporia tubulosa* (Psychidae) has also been found on Sweet Chestnut trunks, but the larva probably feeds on the algae on the tree trunk.

Discussion

The results of this review show that 72 species of Lepidoptera have now been recorded feeding on Sweet Chestnut (Table 1). During the various searches undertaken at Rewell Wood it was clear that larvae appeared to be at low density on Sweet Chestnut. However, only those branches that were accessible were beaten and it is possible that those branches higher up and beyond easy reach could have supported more larvae. Also the number of larvae found does not correspond well with the number of adult moths recorded at individual mercury vapour 125 watt traps run in the middle of Sweet Chestnut coppice blocks (almost pure stands) for another aspect of the Forest Research study. For example, on 25 June 2003, Mottled Beauty *Alcis repandata*, Brindled White-spot *Parectropis similaria* and Light Emerald *Campaea margaritata* were found in numbers as an adult, 272, 46 and 39 respectively (Clarke, 2004), indicating that the larvae of these were either overlooked or the adults came from elsewhere. The latter possibility is considered unlikely due to the nature of the individual trap sites and also would not explain the differences in catches observed between the various age classes of the coppice blocks. For example, 29.9% of the total *A. repandata* found on 4 July 2002 (from figures derived from Clarke, 2003) in one of the older coppice blocks compares favourably with 29.7% of the total found on 25 June 2003 and 25% found on 6 July 2004 in the same coppice block, when comparing the six trap sites that were run in every year. These differences between coppice blocks suggest that individual age classes of coppice are more suitable for some species than others and would also indicate that larvae were overlooked.

The diversity of species found as larvae does compare more closely with several of the more numerous species found as adults at the light traps in June and July. For example, on the 25 June 2003, 211 species (not including species aggregations) were recorded at eight light traps run within the coppice stands of between two and 20 years of age (Clarke, 2004). The larval foodplants of many of the moths recorded are grasses, herbs and algae etc., but of those that fed on deciduous trees, 74 species of moth were recorded. Of this total 28 (nearly 40%), have been found feeding on Sweet Chestnut as a larva.

Amongst the larvae found on Sweet Chestnut are several species of conservation significance, such as the Waved Carpet *Hydrelia sylvata*, the Scarce Merveille du Jour *Moma alpium*, the Olive Crescent *Trisateles emortualis* and *Oecophora bractella*, along with several other scarce and local species, including the gelechiid *Teleiodes wagae* and Brindled White-spot *P. similaria*. From their occurrence in woodland habitats, particularly where Sweet Chestnut is prevalent, we strongly suspect that there are several other species yet to be found associated with Sweet Chestnut, including further species of conservation concern, such as Clay Fan-foot *Paracolax tristalis* and White-line Snout *Schrankia taenialis*, both UK BAP Priority species.

Combining the number of macro-moth and micro-moth species associated with various tree species, using Waring, Townsend & Lewington (2003) and Emmet (1988) respectively, shows that the total of 72 species feeding on Sweet Chestnut is similar, even when removing the nine species found as single larvae, to the figures for trees such as elm *Ulmus*, including Wych Elm *U. glabra* (69 species), alder *Alnus* spp., predominantly *glutinosa* (68), Aspen *Populus tremula* (63) and Beech *Fagus sylvatica* (41), and is considerably more than lime *Tilia* spp.(36) and natives such as Hornbeam *Carpinus betulus* (34), Field Maple *Acer campestre* (29), Ash *Fraxinus excelsior* (26), although these figures may well under-represent the palatability of these species.

Although likely to be an underestimate, Young (1997) gives 119 species as associated with oak. Fifty-four of the species listed in Table 1 have been recorded feeding on oak, while 12 species will also feed on Beech. Sweet Chestnut, oak and Beech are all members of the Fagaceae. This taxonomic relationship, with the assumption that these related trees are likely to share chemical and physical features, make it more likely that these moths will switch to a more closely related hostplant (Connor et al, 1980), combined with Sweet Chestnut being known as tree of woodlands since at least the Middle Ages and generally found associated with oak and Beech, may help to explain this observation.

Table 1. Lepidoptera species recorded feeding on Sweet Chestnut *Castanea sativa.*

	Emmet (1988)	Waring, Townsend & Lewington (2003)	Clarke (2004)	Welch & Greatorex-Davies study	Other sources	Comments
Nepticulidae						
Stigmella ruficapitella					+ (C. W. Plant, pers. comm.)	
Stigmella samiatella	+		+			
Tischeriidae						
Tischeria ekebladella	+			+		
Tischeria dodonaea	+					
Bucculatricidae						
Bucculatrix demaryella	+				+ (D. Green, pers. comm.)	
Gracillariidae						
Phyllonorycter messaniella	+		+	+		
Sesiidae						
Yellow-legged Clearwing *Synanthedon vespiformis*		+			+ (J. Clarke, pers. comm.)	Nationally Scarce
Yponomeutidae						
Argyresthia glaucinella					+ (D. Green, pers. comm.)	In living bark
Ypsolopha parenthesella				+		A single larva found
Ypsolopha ustella				+		A single larva found
Oecophoridae						
Oecophora bractella				+		Larvae found under the bark of dead branches; pRDB 3 (Rare)
Carcina quercana	+					
Diurnea fagella				+	+ (D. Green, pers. comm.)	

	Emmet (1988)	Waring, Townsend & Lewington (2003)	Clarke (2004)	Welch & Greatorex-Davies study	Other sources	Comments
Gelechiidae						
Teleiodes wagae					+ (Emmet & Langmaid, 2002)	Nationally Scarce
Tortricidae						
Pandemis cerasana				+		
Pandemis cinnamomeana				+		A single larva found
Syndemis musculana					+ (J. Langmaid, pers. comm.)	A single larva found
Eulia ministrana			+			
Tortrix viridana				+		
Pammene fasciana	+					
Cydia splendana	+					
Cydia pomonella	+					
Pyralidae						
Agrotera nemoralis	+					
Lasiocampidae						
Oak Eggar *Lasiocampa quercus*			+			
Geometridae						
March Moth ***Alsophila aescularia***				+		
Common Emerald *Hemithea aestivaria*			+	+		
Little Emerald *Jodis lactearia*		+	+	+		
Clay Triple-lines *Cyclophora linearia*				+		A single larva found

	Emmet (1988)	Waring, Townsend & Lewington (2003)	Clarke (2004)	Welch & Greatorex-Davies study	Other sources	Comments
Broken-barred Carpet *Electrophaes corylata*				+		A single larva found
Winter Moth *Operophtera brumata*				+	+ (D. Green, pers. comm.)	
Satyr Pug *Eupithecia satyrata*			+			A single larva found
Grey Pug *Eupithecia subfuscata*					+ (D. Green, pers. comm.)	
Waved Carpet *Hydrelia sylvata*		+	+			UK BAP Priority
Scorched Wing *Plagodis dolabraria*		+				
Brimstone *Opisthograptis luteolata*			+			
Early Thorn *Selenia dentaria*				+		A single larva found
Purple Thorn *Selenia tetralunaria*			+			
Scalloped Hazel *Odontopera bidentata*			+	+		
Feathered Thorn *Colotois pennaria*					+ (D. Green, pers. comm.)	
Small Brindled Beauty *Apocheima hispidaria*		+		+		
Pale Brindled Beauty *Phigalia pilosaria*				+		
Peppered Moth *Biston betularia*		+	+	+		
Scarce Umber *Agriopis aurantiaria*				+		

	Emmet (1988)	Waring, Townsend & Lewington (2003)	Clarke (2004)	Welch & Greatorex-Davies study	Other sources	Comments
Dotted Border *Agriopis marginaria*			+			
Mottled Umber *Erannis defoliaria*		+		+		
Mottled Beauty *Alcis repandata*			+	+		
Pale Oak Beauty *Hypomecis punctinalis*			+			
Engrailed *Ectropis bistortata*			+	+		
Brindled White-spot *Parectropis similaria*			+			
Common White Wave *Cabera pusaria*			+	+		
Light Emerald *Campaea margaritata*		+	+	+		
Notodontidae						
Buff-tip *Phalera bucephala*			+	+		
Coxcomb Prominent *Ptilodon capucina*			+	+		
Lymantriidae						
Vapourer *Orgyia antiqua* Pale Tussock			+			
Calliteara pudibunda			+	+		
Yellow-tail *Euproctis similis*			+			
Noctuidae						
Pale-shouldered Brocade *Lacanobia thalassina*				+		

	Emmet (1988)	Waring, Townsend & Lewington (2003)	Clarke (2004)	Welch & Greatorex-Davies study	Other sources	Comments
Small Quaker *Orthosia cruda*				+		
Common Quaker *Orthosia cerasi*				+	+ (D. Green, pers. comm.)	
Clouded Drab *Orthosia incerta*				+		
Twin-spot Quaker *Orthosia munda*				+		
Hebrew Character *Orthosia gothica*			+	+		
Satelite *Eupsilia transversa*			+	+		
Chestnut *Conistra vaccinii*				+		
Scarce Merveille du Jour *Moma alpium*		+	+			A single larva found. UK BAP Priority
Grey Dagger *Acronicta psi*			+			
Copper Underwing *Amphipyra pyramidea*				+		
Dun-bar *Cosmia trapezina*			+	+		
Bordered Sallow *Pyrrhia umbra*			+			
Green Silver-lines *Pseudoips prasinana*		+	+			
Nut-tree Tussock *Colocasia coryli*			+	+		
Olive Crescent *Trisateles emortualis*		+?			+ (J. Clarke, pers. comm.)	Associated with old and decaying leaves of Sweet Chestnut. UK BAP Priority

Conclusions

The diversity of species found as larvae would indicate that Sweet Chestnut is indeed an important, and perhaps under-valued, hostplant for moths. Moreover, several scarcer species were found, demonstrating the conservation potential of Sweet Chestnut. It could be that the long term residence of this tree in Britain and widespread planting of the species, at least in south-east England, combined with the local abundance and its frequent close association, and taxonomic relationship with oak and Beech has led to many moth species to find Sweet Chestnut a palatable alternative host.

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A new food-plant for *Rhigognostis incarnatella* (Steudel, 1873) (Lep.: Yponomeutidae) in Scotland

The status of *Rhigognostis incarnatella* (Stdl.) as a native versus naturalised species in Scotland has often been discussed by Scottish entomologists. On several occasions in Scotland *R. incarnatella* has been reared from or captured close to *Hesperis matronalis* (Dame's violet) – a non-native garden escape. However singletons have often been taken in an upland or pinewood context far away from any stands of *Hesperis* either in or out of gardens. Its food-plant in such situations has been a source of some speculation but *Alliaria petiolata* (Garlic Mustard) (see Emmet, A.M. (1991. Chart showing the Life History and Habits of British Lepidoptera, *Moths and Butterflies of Great Britain and Ireland* **7**(2): 105) could not be a candidate. The species has now been reared from a larva feeding on *Draba incana* (Hoary Whitlowgrass) growing at 600m a.s.l. on a crag in the Breadalbane Hills thus solving the enigma of its "wild" food-plant and reinforcing its native status.

On 24.v.2005 a single small green larva was found feeding on the central shoot of a plant of *Draba incana* growing on a rocky ledge on the crags above Lochan an Lairige, (O. S. grid reference NN 5939), Meall nan Tarmachan, Perthshire (VC 88). There was no apparent silk present, and the larva was feeding exposed on the upperside of the leaf. It was at first mistaken for a first or second instar noctuid larva, but on 7.vi.2005 it spun a boat-shaped open net-work cocoon, typical of a plutelline. Emergence of a slightly deformed imago occurred on 27.vi.2005.— K. P. Bland, National Museums of Scotland, The Granton Centre, 242 West Granton Road, Edinburgh EH5 1JA.

Chrysodeixis chalcites (Haw.) (Lep.: Noctuidae), the Golden Twin-spot: a second confirmed record for Bedfordshire

On the night of 21 October 2005 at Eaton Ford, St. Neots, Tony Lawrence attracted a single example of *Chrysodeixis chalcites* the Golden Twin-spot to light. Whilst Eaton Ford is not in the current administrative county of Bedfordshire, it does fall into the Bedfordshire vice-county (VC 30). This capture is only the second record for this overseas immigrant in the Bedfordshire vice-county and interestingly was one of only three moths taken that night due to inclement weather! The first VC 30 record of *C. chalcites* is from the Headquarters of the Royal Society for the Protection of Birds at The Lodge, Sandy where one was found on an indoor window cill in an upstairs corridor in the main house by Mrs. D. Dawson, on 14.xii.2001.

My sincere thanks to Barry Dickerson, Huntingdonshire (VC 31) Moth Recorder for determining the specimen.— Les J. Hill, Bedfordshire Macro-moth Recorder, 44 Suncote Avenue, Dunstable LU6 1BW.

Great Oak Beauty _Hypomecis roboraria_ ([D. & S.]) (Lep.: Geometridae): A partial second brood?

Great Oak Beauty is recorded regularly in Windsor Forest, Berkshire (VC 22), ten to fourteen per trap not being uncommon, but whilst light trapping there on the 7 September 2005 I was surprised to take a male in mint condition as the generally accepted flight period for this species, in Britain, is usually given as mid June to mid July (for example, Waring P. and Townsend M., 2003. *Field Guide to the Moths of Great Britain and Ireland*).

Great Oak Beauty records with specific dates quoted in Baker B. R. (1994. *The Butterflies and Moths of Berkshire*) give an earliest flight time of 12 June (1934) and a latest of 23 July (1938 & 1980). The current Berkshire Database, which continues from where Baker left off, has an earliest sighting of 27 May (2003) and a latest of 19 July (2000) (Harvey, M. C., pers. comm.). The database contains 54 records, made on 44 dates, from 1996 to 2005, mainly from 1999 to 2005, and this run of records shows an irregular but positive shift to earlier first and earlier last sightings by up to 16 and 23 days respectively. The record from 7 September 2005 was 46 days later than any of those published above and was 73 days later than my previous record this year, on 26 June 2005 (when 10 were recorded). This was despite having trapped in the same compartment in suitable habitat and during the recognised flight period on 14 July 2005. Further trapping was also undertaken here, outside of the normal flight period, on 9 and 17 August 2005. This species is stated as being partially second brooded in parts of the Continent in Reichholf-Riehm H. (1991. *Field Guide to Butterflies & Moths of Britain and Europe*). Another sign of climate change?

I would like to thank Bernard A. J. Clark for commenting on an earlier draft of this note. Recording in Windsor Forest was undertaken under permit from the Crown Estate/English Nature.— David J. White, 5 Laxton Green, Maidenhead, Berkshire SL6 3HW.

Orgyia antiqua (L.) (Lep.: Lymantriidae) larvae on Bracken *Pteridium aquilinum*

In an interesting note on the larvae of certain Lepidoptera species feeding on Bracken *Pteridium aquilinum*, Lewis, Lord and Baker (2005. *Ent. Rec.* **117**: 47-48) record finding larvae of the Vapourer *Orgyia antiqua* feeding on this, which were reared to pupation, in Glamorgan during a survey carried out between 2002 and 2004. They state that they were unable to find a previous record of the species using this plant.

On 27 August 1998, at Gutter Mire, Devon (VC 3) (O. S. grid reference SX 5866) I found a few larvae of this species on Bracken fronds. I did not keep any to prove that they would eat this, but am sure that this was their foodplant. This is because the area comprised fairly heavily grazed grass with some moss and a little heather, but no plants taller than Bracken, and so there were no trees or bushes on which the larvae might have been feeding and then fallen onto the Bracken.— R. J. HECKFORD, 67 Newnham Road, Plympton, Plymouth, Devon PL7 4AW.

Ruspolia nitidula (Scopoli) (Orth.: Tettigoniidae) in Dorset

On or about the evening of 7 September 2005, while cycling after dark along the promenade at Canford Cliffs, Poole, JD heard a very loud and unfamiliar stridulation apparently emanating from a gorse bush at the foot of the cliffs and immediately adjacent to the promenade. On hearing JD's account of his find, and after questioning him closely on 2 October, MJS thought that the stridulation was suggestive of the Large Cone-head *Ruspolia nitidula*. Nothing was to be heard when MJS visited the locality that evening in rather cool conditions, nor was he able to find anything during a daytime search the following day. On 6 October, a much warmer evening, MJS arrived on the scene at 19.20 hours, it being already dark. At first nothing could be heard, and he walked about a hundred metres along the promenade, listening out with a bat-detector. As he made his way back towards the place where the insect had originally been heard the bat-detector suddenly picked up a loud and continuous stridulation unlike anything MJS had ever heard. With the bat-detector tuned to the peak frequency, which seemed to lie just below 20 kHz, the sound had an extraordinary resonance, ringing like a very loud alarm-clock. After walking about fifty metres MJS came to within a few feet of the bush-cricket. Now, with the unaided ear, he could clearly make out occasional very high-pitched "squeaks" inserted into the uniform buzzing, as described by Bellmann (1985 *Heuschrecken. Beobachten, bestimmen.* Melsungen), but which Ragge and Reynolds (1998 *The Songs of the Grasshoppers and Crickets of Western Europe.* Harley Books) did not detect in their recordings of the species. At this point JD arrived and with the help of two torches we soon discovered the insect, a male *Ruspolia nitidula.*

The following evening JD returned alone and soon re-found the bush-cricket, which by now had lost its left hind leg. As he watched, it climbed to the tip of the inflorescence of an unidentified grass, (probably an *Agrostis* species) and began to feed on the spikelets. He managed to take some Flash photographs in which the distinctive yellow mouth parts are clearly visible.

This record, just two years after three males were found on the Isles of Scilly (Hathway et al. *British Wildlife* **15**: 45-46) is further evidence that it has the potential to colonise our south-coastal counties. *Ruspolia* has been expanding its range northwards in France for a number of years. Peter Stallegger (*pers.comm*) has kindly provided us with up to date news of its status in Normandy, where it has been establishing itself since 1999. The first records were from the Perche in the extreme south of the region. In 2002 it was reported for the first time from Manche and in 2004 from Calvados, also for the first time. So far it has not been found in the Cotentin peninsula.— MICHAEL J. SKELTON, 42 Grosvenor Gardens, Bournemouth. BH1 4HH and JOHN DEAN, 10 Queensland Road, Boscombe, Bournemouth BH5 2AB.

The Argent & Sable *Rheumaptera hastata* (L.) (Lep.: Geometridae) feeding on Bog Myrtle *Myrica gale* in southern England

On 27 May and 3 June 2004, DH observed adult Argent & Sable moth *Rheumaptera hastata*, at Shapwick Heath National Nature Reserve, Somerset, ovipositing on Silver Birch *Betula pendula*. Eggs were laid singly on the underside of young birch leaves near the tip of a branch, up to 130cm above ground on a few small isolated birches bordering a woody edge to a damp field. On 9 June 2004 at the same site I returned to look for more eggs and observed a single female Argent & Sable continuously for 33 minutes as it laid a series of 10 eggs on Bog Myrtle *Myrica gale*. All eggs were laid singly on small (<35cm) plants on young, pale green leaves, at an average height of 11cm (range 4-20cm above ground). To our knowledge, this would appear to be the first occasion that this species has been found breeding on Bog Myrtle in southern England, where it is usually considered to be associated with birch

Returning to the site on 30 June 2004, DH & MP located Argent & Sable larvae among spun leaves on both Silver Birch (three larvae) and Bog Myrtle (12 larvae). In all cases larvae were found individually inside spun leaves on plants exposed to full sunlight. The site is managed as part of a wet grassland restoration project through a mixture of cattle-grazing and burning, resulting in an abundance of small, individual Bog Myrtle plants. No Argent & Sable larvae were found on larger plants growing in denser stands. Additional species noted in spinnings among Bog Myrtle shoots were Powdered Quaker *Orthosia gracilis* and the tortrix *Aphelia viburnana*. However, spinnings formed by Argent & Sable larvae were generally looser in structure than the flat spinnings of the other species, with a spacious 'box-like' central chamber in which the larva was located.

Populations of Argent & Sable in southern England have previously been considered to breed on birch (Skinner, 1984. *The colour identification guide to*

moths of the British Isles. Viking, London). The adults observed at this site were of the large, boldly-marked form referred to as the subspecies *A. hastata hastata*, found throughout England and Wales to southern Scotland (Waring, Townsend & Lewington, 2003. *Field guide to the moths of Great Britain and Ireland*. British Wildlife Publishing). The smaller and more intricately marked northern form *nigrescens* is associated with Bog Myrtle in Scotland, although it is possible it also utilises birch (Skinner, *op. cit.*). These observations suggest that it may be worth examining Bog Myrtle where both the moth and the plant occur together elsewhere in the southern parts of its range. Any further observations of breeding requirements across its range may assist efforts to conserve this UK Biodiversity Action Plan Priority species, which has declined across much of its former range.

We would like to take this opportunity to thank English Nature for its continued support of Butterfly Conservation's *Action for Threatened Moths Project* and for access permission to the site.— D. Hoare, Butterfly Conservation, c/o Surrey Wildlife Trust, School Lane, Pirbright, Woking, Surrey GU24 0JN and M. Parsons, Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP.

The colonisation of north-east Scotland by Chamomile Shark *Cucullia chamomillae* (D. & S.) (Lep.: Noctuidae)

The Chamomile Shark was unknown in north-east Scotland before 2003, but in the last three years it has been recorded as resident in all four Watsonian Vice-counties; VC 91 (Kincardineshire), VC 92 (South Aberdeenshire), VC 93 (North Aberdeenshire) and VC 94 (Banffshire). It is now present both at the coast and inland and is virtually ubiquitous in the arable farmland that dominates the northern part of VC 92 and the southern part of VC 93.

Palmer *et al* (*Ent. Rec.* **114**: 145-148 and 2006, in press*) have shown that north-east Scotland is regularly gaining new species from the south and west, but the colonisation by Chamomile Shark stands out as being particularly rapid and spectacular. It is my contention that this has probably been the result of a combination of factors. Recent climatic changes have produced conditions in which the moth can survive and breed and the activities of man, notably through recent agricultural practices, have provided an abundance of the primary foodplant, scentless mayweed *Tripleurospermum indorum*, which has allowed it to spread rapidly and thrive.

Roy Leverton (2005. *Atropos* **26**: 53-54) has already described the early state of our knowledge of this colonisation. To summarise, I recorded a single adult inland from North Aberdeenshire VC 93 near Auchnagatt at O.S. grid reference NJ 9242 in 2003 and again from the same site in 2004, Mark Young also recorded an adult in VC 93 at Oldmeldrum NJ 8227 in 2004 and Roy Leverton found larvae on the Banffshire VC 94 coast near Macduff at NJ 7164 in 2004. Helen Taylor subsequently recorded another adult yet further inland near Fyvie at NJ 8039 in 2005.

With the moth apparently established as resident, a more concerted effort to search for larvae was made by several local lepidopterists in summer 2005 in order to try and

*see pages 23-27 (Editor)

obtain a better picture of its distribution. Although adult moths are normally taken to light only in very low numbers, the larvae of Chamomile Shark are distinctive and reasonably easy to find by either searching or sweeping the foodplant. The results of searching for larvae in 2005 proved that Chamomile Shark is resident in all four Vice-counties. At the coast, Roy Leverton and Mark Young found it in VC 91 at St Cyrus, Nick Littlewood recorded it from Blackdog in VC 92 and a Glenn Roberts found it while surveying habitats near the Ythan estuary close to the VC 92/93 border. Inland, larvae were recorded from a total of 11 locations in VC 92 and VC 93. I found larvae near Auchnagatt at NJ 9242 (almost certainly the source of the adults trapped at my home site in 2003 and 2004), north of Ellon at NJ 9531 and west of New Deer at NJ 8647. Helen Taylor reported it from near Fyvie at NJ 7838 and Jon Bailey recorded it near Monymusk at NJ 6816. On 16 July 2005, I drove from Ellon to Inverurie and then to Oldmeldrum, checking likely sites at regular intervals. Larvae were duly recorded from 6 locations: west of Ellon at NJ 9031, near Udny Green at NJ 8725, at Whiterashes NJ 8523, between Whiterashes and Inverurie at NJ 8222, just east of Inverurie at NJ 7920 and at Oldmeldrum NJ 8026.

Perhaps most significantly, I drew not a single blank from my efforts in 2005 and recorded larvae at every one of the nine sites I visited. Wherever I stopped and checked scentless mayweed, I found Chamomile Shark. I should also point out that the sites I examined were only a small proportion of the locations with abundant scentless mayweed and many potential sites were ignored because they were close to sites where larvae had already been found. At all of the inland sites examined, the scentless mayweed was associated with land that has been disturbed as a result of human activity. While the locations included building sites and set-aside agricultural land, the majority were arable field margins, notably but not exclusively winter rape, where abundant scentless mayweed often extended well into the crop itself – presumably as a result of not spraying herbicides to the field edges.

While climatic change and agricultural practices may explain the rapid colonisation of north-east Scotland by Chamomile Shark, the original source of the moth and whether this colonisation is a local phenomenon or is part of a more widespread expansion is much less certain. Has it arrived through migration, expanded out from a hitherto unknown local or low-density resident population, or has it arrived from the south along the arable agricultural band that borders the east coast of Scotland? Previous Scottish records are concentrated far to the south, in the central belt, extending north only as far as southern Perthshire, although there is also a single record from Inverness-shire in 1954. Bob Palmer and others have recently recorded it in the west from Newton Stewart and from the Isle of Arran. I would be grateful for any information that readers might have that could shed light on this question, particularly recent records of the moth or its larvae from elsewhere in Scotland and northern England.

I would like to thank Jon Bailey, David Barbour, Roy Leverton, Nick Littlewood, Helen Taylor and Mark Young for contributing data to the above, Keith Bland for providing data from SSRI and particularly Bob Palmer for his encouragement and advice throughout.— CHRIS HARLOW, Cairncummer, Auchnagatt, Ellon Aberdeenshire AB41 8UA (E-mail: chris_harlow_uk@yahoo.co.uk)

EUCHROMIUS CAMBRIDGEI (ZELLER, 1867) (LEP.: PYRALIDAE, CRAMBINAE) AN ADVENTIVE SPECIES NEW TO BRITAIN

[1]P. D. SHARPE AND [2]D.V. MANNING

[1] *41 Julian Way, Kingsthorpe, Northampton NN2 8AA.*

[2] *27 Glebe Rise, Sharnbrook, Bedford MK44 1JB.*

Abstract

The first occurrence of *Euchromius cambridgei* (Zeller, 1867) (Lep.: Pyralidae, Crambinae) in Britain is documented and the moth is illustrated in colour.

Discussion

After the night of 16-17 August 2005, PDS found a pyralid moth that he was unable to recognize on a sheet adjacent to the moth trap in his garden at Kingsthorpe. He pinned the specimen, which was later photographed by J. Blincow. An image was then sent to DVM, in his role as micro-moth recorder for Northamptonshire, for identification. Although DVM considered that the moth appeared to be a *Euchromius* species, he was unable to name it to species level. Subsequently, he forwarded the image to both David Agassiz and John Langmaid, who independently identified it as *Euchromius cambridgei* (Zeller, 1867) – a member of the subfamily Crambinae of the pyralids.

The species is illustrated in Plate A and is also pictured in Błeszyński (1965), where the genitalia are figured.

Plate A. *Euchromius cambridgei* (Zell.). Kingsthorpe, Northamptonshire, 16 August 2005, P. D. Sharpe.

Euchromius cambridgei occurs in southern Europe, the Canary Isles, North Africa and the Middle East from Jordan, Iran, Arabia, to Afghanistan and West Pakistan. The present example represents the first record of this species in the British Isles. The larval foodplant is unrecorded.

John Langmaid has suggested that in the British checklist this species should follow *Euchromius ocellea* (Haworth) and should be given the Bradley & Fletcher (1979) species number 1289a.

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Peribatodes ilicaria (Geyer) (Lep.: Geometridae) in Kent in 2002

Whilst recently looking through the species accounts in the *Field Guide to the Moths of Great Britain and Ireland* (2003) by Waring & Townsend, I noticed a report of *Peribatodes ilicaria* (Lydd Beauty) had been included from Dymchurch, Kent on 21 July 2002. This record refers to a specimen taken by the late Dennis O'Keeffe and tentatively identified as *ilicaria* at the time of capture. Sadly Dennis died suddenly later that year before he had a chance to fully examine the moth in question. Subsequent to Dennis's death, Bernard Skinner, Brian Elliot and myself all examined the specimen, and agreed that it was a rather worn example of *Cleorodes lichenaria* (Brussels Lace); thus, the record in the *Field Guide to the Moths of Great Britain and Ireland* must be regarded as erroneous. Interestingly, although *Cleorodes lichenaria* is not a resident species in Kent, a second example occurred at Greatstone a few days later, both specimens probably being continental in origin.— Sean Clancy, 1 Myrtle Villas, Sussex Road, New Romney, Kent TN28 8DY.

DICHELIA HISTRIONANA (FRÖLICH, 1828) (LEP: TORTRICIDAE) NEW TO THE BRITISH ISLES

[1] Philip H. Sterling and [2] Marcel Ashby

[1] *Environmental Services, Dorset County Council, County Hall, Colliton Park, Dorchester, Dorset DT1 1XJ, U.K.*

[2] *30a Alexandra Road, London N8*

Abstract

The discovery of *Dichelia histrionana* (Frölich, 1828) (Lepidoptera: Tortricidae) new to the British Isles in Middlesex (VC21) is reported.

Introduction

On 8 June 2003, in his garden in Wood Green, London (Middlesex, VC 21), MA found a tortricid moth in his 125 watt mercury-vapour light-trap that he did not recognise. Being relatively new to recording microlepidoptera, MA fortunately sets a selection of specimens for subsequent identification, usually by Colin Plant. At a meeting of the Hertfordshire Moth Group early in 2004, at which PHS was giving a lecture on microlepidoptera, MA showed the tortricid to him, amongst a small number of other unidentified specimens. PHS did not immediately recognise the species, and thought it might be something unrecorded in this country. It was undoubtedly in the Tortricinae from its wing shape, but appeared to be too well marked and slightly brownish for a species of *Cnephasia*, and otherwise with wrong markings for *Syndemis musculana* (Hb.) or *Neosphaloptera nubilana* (Hb.). PHS dissected the specimen and it was then immediately obvious that it was *Dichelia histrionana* (Frölich), a species hitherto believed to be unrecorded in the British Isles. The adult and genitalia of both sexes are figured in Razowski (2002).

Recognition

***Dichelia histrionana* (Frölich, 1828)**

Tortrix histrionana Frölich, 1828, *Enumeratio Tortr. Wurtemb.* **57**. *(Germany).*

Description of imago

Based on the Middlesex specimen, a male (Plate B). Wingspan 16 mm. Head and frons whitish fuscous; antenna brown, weakly annulated dark fuscous; labial palpus whitish fuscous with scales tipped dark fuscous. Thorax fuscous with long hair-like scales extended over mesothorax, tegulae fuscous, posterior scales tipped whitish fuscous. Forewing with costal fold from base to one third, ground colour grey somewhat mixed fuscous with scattering of orange-brown scales, fasciae and other markings brownish black, indistinct narrow fasciae near base, at one quarter, and one third, a broad inward oblique fascia from costa at one half to tornus, interrupted about disc with distinct dot beyond, and a further oblique broad indistinct fascia from costa at three quarters to termen; cilia grey, broad cilia line darker. Hindwing grey, cilia pale grey, broad cilia line darker.

D. histrionana is a variable species. In paler specimens (Plate C) the brownish black fasciae and markings contrast strongly with the pale fuscous ground colour and the interruption of the broad fasciae is pronounced. In darker specimens the fasciae may be almost absent and sometimes the pattern uniformly mottled.

Plate B. *Dichelia histrionana* (Frölich, 1828); Wood Green, London (VC21), 8.vi.2003, M. Ashby

Plate C. *Dichelia histrionana* (Frölich, 1828); Brokared, Hallandsläin, Sweden, 22.vi.1989, P.H. Sterling

Genitalia

The male genitalia of the London specimen are illustrated in Figure 1. They conform well to the drawing in Razowski (*op. cit.*). They are distinctive and quite unlike others of any species currently on the British list.

Taxonomic position

Dichelia histrionana is placed after members of the genus *Aphelia* and before those in *Clepsis* in Karsholt & Razowski (1996), coming directly after *A. viburnana* ([D. & S.]). However, in Bradley (2000), *Aphelia unitana* (Hübn.) (990) is the last in that genus, before *Clepsis*. It is therefore suggested that *D. histrionana* is given the number 990a in the Bradley list. According to Razowski (*op. cit.*) there are three species in the genus in the Western Palaearctic region, but only this one is found in Europe.

Comparison with similar species

Pale specimens of *D. histrionana* are quite striking and consequently unlikely to be overlooked amongst other members of the Tortricidae. However, darker specimens with less contrast in wing markings could be mistaken for dark forms of certain of the *Cnephasia*, perhaps *C. asseclana* ([D. & S.]) or *C. incertana* (Treits.), or otherwise mistaken for *N. nubilana* (Hb.), *S. musculana* (Hb.) or the dark greyish form of *Argyrotaenia ljungiana* (Thunb.). However, in all these other species the broad oblique fascia from the costa at about one half to the tornus is complete, whereas in *D. histrionana* it is interrupted about the disk by the paler ground colour of the forewing. In very dark specimens of *D. histrionana* without fasciae there is sometimes a distinct blackish mark towards the termen.

In addition, in male *D. histrionana* and *S. musculana* only, there are distinctive hair-like scales on the thorax. This was noted by Svensson (1990) and he suggested that both these species should be placed in the same genus under *Syndemis*, believing that this character indicated common ancestry.

Biology and phenology

A brief description of the larva and its feeding habits are given in Razowski (*op. cit.*). It feeds on fir trees *Abies*, and Norway spruce *Picea excelsa* [sic.] = *P. abies* (L.), overwintering whilst small inside a mined needle, and completing feeding in a spinning amongst needles in the early spring. The adult is found from the latter part of May to August. The London specimen was taken on the 8 June. The moth inhabits conifer forests.

Distribution

D. histrionana is found from France to Scandinavia and in central, southern and eastern Europe (Razowski, *op. cit.*). From the distribution given in Karsholt & Razowski, the species appears to be absent from the Iberian peninsula. The specimen in Plate C was taken by PHS in southern Sweden.

Comment

For a species so widespread in central Europe and one which feeds on conifer trees commonly planted in Britain, it is perhaps surprising that this is the first record of

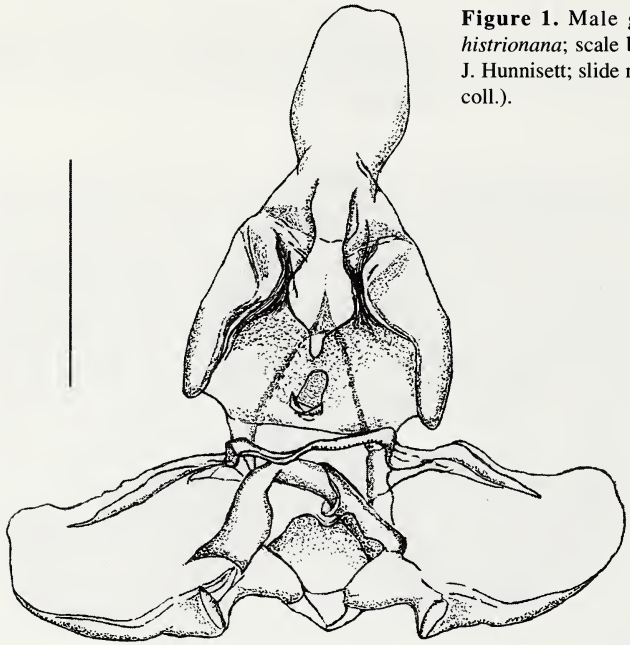

Figure 1. Male genitalia of *Dichelia histrionana*; scale bar = 1mm (drawing by J. Hunnisett; slide ref. PS875, P.H. Sterling coll.).

D. histrionana in the country. Since 2003 no further specimens have been found in MA's garden, nor does the species appear to have been found elsewhere. It is possible that the moth was accidentally imported to this country amongst nursery stock of conifer trees, or even timber, but it must surely be worth moth trapping and looking for larvae in conifer woodlands in Middlesex and probably elsewhere in eastern England and Scotland to establish if this species is resident.

Acknowledgements

We are extremely grateful to Mr John Hunnisett (Weymouth) for providing the genitalia drawing and would like to thank Peter Costen (Guernsey) for his help in sourcing references. We also acknowledge the helpful comments provided by our two anonymous referees.

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LEPIDOPTERA OF ABERDEENSHIRE, KINCARDINESHIRE AND BANFFSHIRE – 10th APPENDIX

[1]R. M. Palmer, [2]M. R. Young and [3]R. Leverton

1 Greenburn Cottage, Bucksburn, Aberdeen AB21 9UA
(bob@bobpalmer.freeserve.co.uk)

2 Culterty Field Station, Department of Zoology, University of Aberdeen,
Newburgh, Aberdeenshire AB41 6AA
(m.young@abdn.ac.uk)

3 Whitewells, Ordiquhill, Cornhill, Banffshire AB45 2HS

Abstract

Nineteen species are added to the list of Lepidotera of north-east Scotland. Data on 7 other species for which there have been no records for many years, or which have expanded their range dramatically, are included.

Introduction

The number of Lepidoptera species being recorded from the north eastern counties of Kincardineshire, VC 91, South and North Aberdeenshire, VCs 92-93 and Banffshire, VC 94 continues to grow. Since the last Appendix (Palmer, Young and Leverton, 2002) 19 new species have been added and some important rediscoveries have been made. Some of the new species are recorded far north or east of their known distributions and one can only speculate as to how they arrived or whether they will establish themselves in the area. In other cases, such as *Cucullia chamomillae* (D.& S.), Chamomile Shark, a spectacular colonisation of an area far north of its previous known distribution appears to have occurred.

Records are from the authors unless otherwise acknowledged. The growing group of local lepidopterists has contributed much of the information included here and our thanks for these to David Barbour (DAB), Arthur Ewing (AEE), Chris Harlow (CJH), Cedric Holmes (CWNH), Nick Littlewood (NL), Scott Paterson (SP), Helen Rowe (HR), Helen Taylor (HT), Jeff Waddell (JW), and Jon and Marion Bailey who run the Rothamsted trap at Monymusk. Visiting lepidopterists: Keith Bland (KPB), Brian Elliott (BE) and Bob Heckford (RJH) have also contributed. Thanks also to Keith Bland for his help in extracting records from the Scottish Insect Record Index (S.I.R.I.) at The Royal Museums of Scotland, Edinburgh.

Many records of the smaller species recorded from one or more of the four vice-counties of north east Scotland have been published in the annual microlepidoptera reviews (Langmaid & Young 2002-2004). With a few exceptions of species we consider notable or important, it seems unnecessary to repeat these here.

Incurvariidae

Adela cuprella (D.& S.) VC 94 Altnaglander NJ 1728 – numerous v.02 (DB) and again in abundance 16.v.04 (MRY). A very local species, known only from this single site in the north east but recorded as far north as Sutherland.

Tineidae

Nemapogon picarella (Clerck) VC 94 Spey Bay NJ 3464 – 18.iii.2004 (AEE) larva on *Piptoporus betulinus* – moth bred. A very rare species, the only previous records from this area are of single specimens in VC 92 in 1970, 1984 and 2004.

Roeslerstammiidae

Roeslerstammia erxlebella (Fabr.) VC 92 Crathie woods NO 2695 – 18.vi.2003 (RJH) A very local species in northern Scotland but recorded from the neighbouring vice-counties of Moray and East Inverness and probably a long overlooked resident.

Choreutidae

Prochoreutis myllerana (Fabr.) VC 93 Gight woods NJ 8238 – 27.v.04, larvae on *Scutellaria* – moths bred. This is the first confirmed record from north-east Scotland where skullcap is a scarce and local plant.

Yponomeutidae

Zellaria hepariella Staint. VC 91 Inchmarlo, near Banchory NO 6796 – one 2003 (CWNH) det. gen. RMP. There are a few scattered records from Scotland, the nearest is from East Inverness.

Gelechiidae

Bryotropha affinis (Haw.) VC 91 Inchmarlo, near Banchory NO 6796 – two 4.vii and 17.vii.05 (CWNH) Recorded quite commonly in much of Britain as far north as East Inverness. There are no previous records from north east Scotland and the species may be a newly arrived resident but more probably an overlooked resident.

Sitotroga cerealella (Olivier) VC 92 Bucksburn NJ 8810 – adventive colonist imported in cobs of a decorative maize known as 'Indian Corn' to a house in Auchleven, VC 93 in 1991. When moths began to emerge from the maize seeds in large numbers they were taken to the Rowett Institute in Bucksburn for identification and became a temporary pest in laboratories there from 1992-1994.

Momphidae

Mompha lacteella (Steph.) VC 91 Inchmarlo near Banchory, NO 6796 – one (CWNH) is the only confirmed recent record. A dot on the map in MBGBI Vol 4 (1) showing the species recorded from VC 93 is an error. L.W.Hardwick erroneously sent a record from Banff to A.M. Emmet as VC93, the record is VC 94 (Macduff 1984) and is unconfirmed but probably correct, the species is recorded from neighbouring Morayshire.

Tortricidae

Pandemis corylana (Fabr.) VC 92 Crathie NO 2795 – two 14.vii.2003 (B.E.). Apart from the record of a single specimen in VC 94 in 1995 (Palmer et al, 1998) this species has not been seen here since the 19th Century (Reid, 1893).

Acleris effractana Hübn. VCs 92 and 93 – a newly recognised species recently separated from *A. emargana* (Fabr.) (*vide* Karsholt *et al* 2005). The species has been known from N.E.Scotland since 1974, when it was bred from sallow on Sands of Forvie N.N.R. (VC 93) NK 0126 but identified as *A. emargana*. *A. effractana* was bred again from the same site in 2004 and has also been found as adults at Loch of Strathbeg 17.ix.79 and in VC 92 at Harestone Moss 1.ix.74. (*Acleris emargana* is a widespread species in N.E.Scotland)

Celypha rivulana (Scop.) VC 91, Glassel NO 6497– several 4.vii.2003 (KPB and CWNH) and subsequently found to be common in this small area. Also recorded from Ballater NO 3794 – one 14.viii.2005.

Epiblema trimaculana (Haw.) VC 93 Oldmeldrum NJ 8227 – two, 6-7.vii.2003. These specimens may have been migrants, there have been no subsequent records. The species is generally of a more southerly distribution but in June 2003 one was also recorded from the Black Isle (VC 106).

Lathronympha strigana (Fabr.) VC 91 St. Cyrus N.N.R. NO 7463 – 25.vii.2004. This is a species which had long been expected to turn up, and St. Cyrus with its extensive sand dunes and *Hypericum* in plenty was a likely place to discover it. Only one has been found so far but whether the species is a long overlooked low density resident or a migrant is not known. If it is the latter it seems very likely to establish itself there.

Pyralidae

Achroia grisella (Fabr.) VC 92 Cults NJ 8903 – rediscovered xi.2002 in a suburban loft where it was a resident in an old 'wild' nest of hive bees. The nest was destroyed with pesticides and at the the time of their discovery only corpses remained. VC 91 Inchmarlo – three – 11.vii.2005. 17.vii.2005 and 6.ix.2005 (CWNH). Last recorded from Netherley, Kincardineshire in 1942, when three were bred from a beehive; this species seems to have suffered from improved beekeeping techniques.

Plodia interpunctella (Hübn.) VC 93, Wester Duncanstone, near Insch NJ 5626 - 1997, one bred from a bag of organic flour (AEE). VC 92 Aberdeen, two bred from nut chocolate in 2005. These are the only records of this well known adventive species since one was taken in Aberdeen, bred from raisins in 1934.

Geometridae

Timandra comae (Schmidt) VC 91 one at Muchalls NO 9091 – 4.ix.2004 (JW). This occasionally migratory species has been recorded in the north-east only once previously in the 19th century at Burnhervie VC 92 (Reid, 1897). Details of the recent record have been published in a note by Waddell (2004). This species has also been recorded from Shetland where a total of 11 have occurred, the most recent being one in the spring and five in August of 2004 (Pennington 2004-5).

Coenocalpe lapidata (Hübn.) VC 92 between Ballater and Braemar NO 3195 – a strong colony was discovered on 11.ix.2002 (HR). There was speculation in

Appendix 9 that this species was resident on Upper Deeside, based on the capture of a single specimen in a Rothamsted trap near Braemar and this suggestion is confirmed.

Acasis viretata (Hübn.) VC 91 Inchmarlo, near Banchory NO 6796 – two, v.2003 (CWNH). A recent arrival, spreading, and possibly becoming established. VC 92 subsequently recorded from three localities; near Inverurie 6.v.2004 (HR), Bucksburn NJ 8810, 14.v.2004, Monymusk Rothamsted trap NJ 6619, 22.v.04. The origin of five specimens in two years of a species which is not a noted migrant is a mystery but there are records in S.I.R.I. from Angus (VC 91), West Inverness-shire (VC 97), [and also from VCs 98 and 104]. There is also a record from the Morayshire border just west of Banffshire in 2003.

Lomographa temerata (D.& S.) VC 91 Feteresso, NO 7889 – one, 17.vi.2005 (NL). Recorded from the south of Scotland, records in S.I.R.I. give localities in VCs 72, 73, 74 and 76 and in the central lowlands; VCs 99 and 86. The most northerly record we have located is of one caught by Brian Neath at Dornie, Wester Ross in 2005.

Nolidae

Nola confusalis (H.-S.) VC 92 Rothamsted trap at Monymusk NJ 6619 – two, 26.iv and 17.v.2003 and subsequently in small numbers in 2004 (three) and 2005 (one). VC 93 Auchnagatt NJ 9242, one, 10.vi.2005 (CJH). This species was recorded, new to VC 94 in the previous appendix and so appears to be colonising the area from the west.

Noctuidae

Agrotis puta (Hübn.) VC 92 Bucksburn NJ 8810 – one, 14.vi.2004. Virtually unknown in Scotland it has been suggested that this specimen was a possible adventive from the boot of my (RMP) car! I returned from a moth trip to Southsea the previous day but as the journey home took me three days and several stops along the way and moths found in hot cars are usually dead, this seems unlikely.

Cucullia chamomillae (D.& S.) VCs 91, 92, 93, 94 – the most remarkable species on the list, well known from the west of Scotland and the central belt, where it was recorded regularly in the 1970s at Falkirk and Grangemouth (CWNH) and has more recently been recorded from Galloway and the Isle of Arran (RMP). In S.I.R.I. there are records from Perthshire but none since 1934 and a single record from Newtonmore, Inverness-shire in 1954. When a specimen turned up in VC 93 at Auchnagatt NJ 9242 in 2003 we considered it a vagrant but two more were recorded the following year at Auchnagatt again and Oldmeldrum NJ 8227, and larvae were found on the Banffshire coast in 2004 (Leverton, 2005). In 2005 the moth was again found in VC 93 at Windyhills NJ8039 – 29.iv.2005 (HT) and larvae were found at St. Cyrus (VC 91), Blackdog links and the Ythan estuary (VC 92), and all over inland Aberdeenshire, at nine sites, mostly in arable field margins. Full details of this rapid colonisation are the subject of a note (Harlow, in preparation).

Amphipyra berbera svenssoni Fletch. VC 93 Loch of Strathbeg RSPB reserve NK 0558 – one dead in a hide, 26.viii.2004 (SP) and one at Auchnagatt NJ 9242 on 4.ix.2005 (CJH). These may be migrants, one was taken on Shetland with other genuine migrants in 1996, the only Scottish record in S.I.R.I. is of a specimen taken in Glasgow in 1984 but there are unpublished records from VC 81 (one) and VC 80 (10+ at light in a mature oak woodland in 2003 suggesting it is established in the borders) (JW).

Apamea scolopacina (Esp.) VC 92 Rothamsted trap, Monymusk NJ 6619 – one quite fresh specimen 9.viii.2005 is presumed to be a migrant. Published data on the distribution describes the species as occuring as far north as Yorkshire and Cumberland. There are no records in S.I.R.I. but the species has been recorded from the borders, recently in VC80 in consecutive years and once from VC79 (JW).

Heliothis peltigera (D.& S.) VC 94 Ordiquhill NJ 5755. This notorious migrant rarely reaches Scotland, the first north east Scottish specimen was netted at buddleia by day on 26.viii.2002.

Rivula sericealis (Scop.) VC 93 Auchnagatt NJ 9242 – two, 13.viii.2004 (CJH); Oldmeldrum NJ 8227 – one, 12.viii.2004 (accompanied by one *Hyles gallii* (Rott.)) . The three specimens of this species recorded in 2004 are probably migrants: nine were found on Orkney and one on Shetland between 7-17.viii.2004. The species is known to occur in Inverness-shire and sometimes migrates in large numbers

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New factsheets on BAP Priority butterflies and moths

Butterfly Conservation has just published a series of new factsheets that give practical advice on how to manage habitats for threatened butterflies and moths listed as Priority Species in the UK Biodiversity Action Plan. The factsheets cover 39 species that breed partly or wholly on agricultural land and can be downloaded from the Butterfly Conservation website: www.butterfly-conservation.org

Each factsheet provides information on how to identify and survey for the species, which Butterfly Conservation hope will encourage targeted recording effort. They also provide practical advice for land managers, advisors and site owners on how to manage habitats for these threatened butterflies and moths.

The following factsheets are available:

Butterflies

Adonis Blue *Polyommatus bellargus*
Heath Fritillary *Mellicta athalia*
High Brown Fritillary *Argynnis adippe*
Large Blue *Maculinea arion*
Marsh Fritillary *Euphydras aurinia*
Northern Brown Argus *Aricia artaxerces*
Pearl-bordered Fritillary *Boloria euphrosyne*
Silver-studded Blue *Plebejus argus*
Silver-spotted Skipper *Hesperia comma*

Moths

Argent & Sable *Rheumaptera hastata*
Barberry Carpet *Pareulype berberata*
Barred Toothed-striped *Trichopteryx polycommata*
Basil Thyme Case-bearer *Coleophora tricolor*
Black-veined Moth *Siona lineata*
Bordered Gothic *Heliophobus reticulata*
Brighton Wainscot *Oria musculosa*
Buttoned Snout *Hypena rostralis*
Chalk Carpet *Scotopteryx bipunctaria*
Common Fan-foot *Pechipogo strigilata*
Dark Crimson Underwing *Catocala sponsa*
Dark Bordered Beauty *Epione vespertaria*
Dingy Mocha *Cyclophora pendularia*
Double Line *Mythimna turca*
Four-spotted *Tyta luctuosa*
Fiery Clearwing *Pyropteron chrysidiformis*
Heart Moth *Dicycla oo*
Light Crimson Underwing *Catocala promissa*
Lunar Yellow Underwing *Noctua orbona*
Marsh Mallow Moth *Hydraecia osseola hucherardi*
Narrow-bordered Bee Hawk-moth *Hemaris tityus*
Pale Shining Brown *Polia bombycina*
Reddish Buff *Acosmetia caliginosa*
Silky Wave *Idaea dilutaria*
Straw Belle *Aspitates gilvaria*
Striped Lychnis *Shargacucullia lychnitis*
Square-spotted Clay *Xestia rhomboidea*
Sword Grass *Xylena exsoleta*
Waved Carpet *Hydrelia sylvata*
White-spotted Pinion *Cosmia diffinis*

These factsheets were produced thanks to funding from the Department for Environment, Food and Rural Affairs. They are intended to be a resource for land managers and advisors, especially when discussing grants available under the new Environmental Stewardship scheme, which include specific management for targeted butterflies and moths- details of these schemes can be found at www.defra.gov.uk/erdp/schemes/es/default.htm.— KELLY THOMAS, Moth Conservation Officer, Buterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP (e-mail: kthomas@butterfly-conservation.org).

A melanic Reed Dagger *Simyra albovenosa* (Goeze) ab. *murina* Aurivillius (Lep.: Noctuidae) in Essex

Bretherton, Goater and Lorimer (in Heath & Emmet, 1983. *Moths and Butterflies of Great Britain and Ireland*, volume 10. Harley Books), state that the melanic ab. *murina* Aurivillius of the Reed Dagger, the most common form in northern Scandinavia, had not been found in Britain. On the morning of 16.vii.2005 I noticed a dark 'dagger' in my trap along with three typical examples of *S. albovenosa*. I passed this specimen to Brian Goodey who kindly carried out a dissection and confirmed it as being a male *S. albovenosa*.

My trap is situated in my semi-wild garden in Maldon, Essex, which backs onto open farmland, with a seawall about half a mile away. Dykes around the fields contain common reed *Phragmites australis*, the nearest being 250 metres away. The reed dagger is a frequent visitor to my trap from mid-July to early August, with 15 examples in 2004 and 25 in 2005. Recently I have noticed variation in the ground colour of the moths, ranging from typical pale forms to those with light greyish brown forewings and the dark example figured. Given the abundance of local populations and this colour range, it seems far more likely that this dark moth is home-bred and not a migrant, and there was little migrant activity noted around the date of capture. I wonder if anyone else noticed a similar variation in other parts of the country?— RUSSELL NEAVE, 219 Mundon Road, Maldon, Essex CM9 6PW.

Plate D. *Simyra albovenosa* (Goeze) ab. *murina* Aurivillius. Maldon, Essex, 15 July 2005, R. Neave

***Gelechia cuneatella* Douglas (Lep.:Gelechiidae), new to Worcestershire**

As a relative newcomer to moth trapping, 2005 was only my second year in the Garden Moth Scheme (GMS), instigated and administered by Dave Grundy, covering the Midland vice-counties of Worcestershire, Warwickshire, Staffordshire, Shropshire and Herefordshire. Although the GMS is intended for the long term monitoring of our commoner species, by committing participants to regular weekly trapping it encourages many people to trap more often than they otherwise might and has produced some excellent records. During 2005, GMS night found a Purple Marbled *Eublemma ostrina* (Hb.) in the Hall Green, Birmingham (VC 37) garden of Alan Prior and Val Weston and was followed by a Portland Ribbon Wave *Idaea degeneraria* (Hb.) in the Halesowen (VC 37) garden of Gordon and Jill Sturman.

On 27 August 2005, I ran my trap for GMS and one of a handful of unidentifiable microlepidoptera was a gelechid which, following a quick photograph, was consigned to the freezer for later dissection. At this time I had attended a dissection training session, but had carried out few of my own and was experiencing only a 50% success rate in producing reasonable genitalia preparations. Fortunately, by the time I selected the Gelechid for dissection it was almost the last of about 200 specimens I had retained and dissected during the year and so I made a reasonable job of it!

Looking through the genitalia diagrams in *Moths of Great Britain and Ireland* (Harley Books) it seemed clear it was a *Gelechia* sp. and the best match was *G. cuneatella*, with the distinctive serrated uncus. However, with a wingspan I estimated to be approximately 10mm the moth was very small for this species and although worn did not look much like the illustration in the book. *Gelechia cuneatella* also seemed to be incredibly rare, though perhaps under recorded is nearer the truth? Seeking help, I posted a photograph of the moth and genitalia plate on the ukmicromoths web site and sent the moth and slide to the Worcestershire County Recorder, Dr Tony Simpson (I later learnt that Tony was the author of the *Gelechia* section in the book). I was contacted by John Langmaid, Jon Clifton and later by Tony Simpson who were all of the opinion that the moth probably was *G. cuneatella*, but were concerned by the size. It was suggested I email the photographs to Dr Klaus Sattler at the Natural History Museum for his opinion. I very soon received a reply confirming the identification and stating *The moth is perhaps a little atypical but the genitalia leave no doubt. I have considered other, non-British, species but there is nothing with which cuneatella could be confused.*

A search for larvae will be carried out on Willows growing along a stream just 50 metres outside the garden during 2006. I would like to thank all those mentioned above for their help in identifying this species.— PATRICK CLEMENT, 28 Haswell Road, Halesowen, West Midlands B63 1DA (e-mail: patrick.clement1@btinternet.com).

THE RARE BRITISH SHIELDBUG *CARPOCORIS PURPUREIPENNIS* (DEGEER) (HET.: PENTATOMIDAE) FROM PORTLAND BILL, DORSET

[1] Andrew R. Collins and [2] Bernard S. Nau

[1] *228 Kathleen Road, Sholing, Southampton SO19 8GY (E-mail: arc@soton.ac.uk)*

[2] *15 Park Hill, Toddington, Dunstable, Bedfordshire LU5 6AW (E-mail: nau.bs@btinternet.com)*

Abstract

A recent record of *Carpocoris purpureipennis* (DeGeer) (Het.: Pentatomidae) from southern Britain is reported. Previous British records are discussed and pointers for the recognition of the species are given.

Introduction

On the 15 October 2005, ARC visited the Portland Bill area (Dorset, VC 9, O. S. grid reference SY 6872) hoping to see interesting migrant birds, but also looking out for any notable insects. However, very few migrant birds were seen, despite the moderate easterly wind and, although there were some fairly warm sunny spells, few insects were active. Towards the end of the day a final look around the area near the Portland Bird Observatory revealed a rather large, dark shieldbug sunning on the south-facing painted surface of a beach hut. The bug was not immediately recognisable appearing dingy purple-brown in overall colour and having the sides of the pronotum drawn into black-tipped and bluntly pointed 'shoulders'. The unusual structure, size and overall colour seemed wrong for any of the familiar shieldbug species. At this point ARC recalled an illustration, in the Field Studies Council's shieldbug guide (Nau, 2004), of a rare species showing this combination of features and the bug was captured for careful examination at home.

The specimen was found to be very similar to the illustration in the FSC guide of *Carpocoris purpureipennis*, aptly named the Black-shouldered Shieldbug, a species known to be a rare vagrant to southern counties. However, as there are other very similar species in Europe the specimen was referred to BSN for formal identification.

Recognition

The Dorset example is a male of length 12mm and superficially resembles *Pentatoma rufipes* (L.), especially by virtue of its rufous legs. However, the antennae are entirely black apart from the 1st segment, which is extensively orange, although not easy to see in the field. On close inspection, the legs are seen to be covered with tiny black spots.The bug has the lateral angle of the pronotum rounded, with the adjacent margin convex both in front and behind the apex of the angle, whereas *P. rufipes* is concave behind its sharply pointed apex.

Stichel (1961) includes 17 genera in his key to the Tribe Carpocorini and several of these are known from the British Isles: *Palomena, Holcostethus, Carpocoris,* & *Dolycoris*. Stichel separates *Carpocoris* from the first two of the above by its antennae having the 2nd segment distinctly longer than the 3rd, and from *Dolycoris* by its lack of a white basal ring on the 2nd – 5th antennal segments. His key to

species of *Carpocoris* then deals with six species. *Carpocoris pudicus* Poda and *C. melanocerus* Mulsant & Rey are ruled out by the shape of the outer edge scutellum where the taper angle changes; this has a marked indentation not present in the Portland bug. *Carpocoris cyrenaicus* Tamanini is eliminated by its long rostrum, which extends well beyond the hind coxae, but which in *purpureipennis* does not reach beyond the hind coxae. At this point in the key the male claspers (parameres) have to be examined microscopically to distinguish between *C. purpureipennis*, *C. mediterraneus* Tamanini and *C. fuscispinus* (Boheman). Specifically, the position of the end of a keel, along the outer periphery of the curved clasper, relative to the position of a 'tooth' on the inner margin. In the Portland bug, the keel terminates before the 'tooth', eliminating *C. mediterraneus* and *C. fuscispinus* and identifying the present bug as *C. purpureipennis*.

Plate E. *Carpocoris purpeipennis,* Portland Bill, Dorset, 15.x.2005, A. R. Collins.

Nomenclature and previous records

Barclay and Nau (2001) review previous records of *Carpocoris* species in Britain and describe an example of *C. purpureipennis* found in a collection of insects made by students near Bristol on 4 October 1995 (the specimen illustrated in Nau, 2004). This appears to be the only other recent record of a shieldbug of this genus in Britain. The records which pre-date the Bristol example are more difficult to interpret. The few listed by Southwood and Leston (1959) under the name *C. pudicus* (Poda) are considered likely to refer collectively to *C. purpureipennis* (DeGeer) and *C. mediterraneus* Tamanini (Southwood & Leston, 1964). The most recent of these records dates from 1926 at Wye (Kent). The other records comprise another single in Kent, one in Essex, one in Cornwall and six in Devon. The current record is presumed to be the first to have been seen in Dorset.

Conclusions

The observatory area at Portland Bill is remarkable for the large numbers of migrant insects, especially Lepidoptera, that are recorded there. The present bug is the second continental species of shieldbug to have been found here in 2005 (*vide* Slade et al., 2005). It seems highly likely that this example of *Carpocoris purpureipennis* was a primary migrant and it is reasonable to anticipate that further examples may be found in the near future, given ongoing climatic amelioration. There has never been any evidence of this species breeding in Britain, but this is now perhaps a possibility.

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Hazards of butterfly collecting. Exploding *Acraea* butterflies, Africa 1987 – 2005

One fine day in the early 1960s my good friend Bob St. Leger was hurrying home after an official trip. He was District Commissioner in Ahoada in eastern Nigeria, just east of the Niger Delta's numerous branches. He was running late for a planned dinner. But he also suddenly ran into what he described as a "cloud of *Acraea* butterflies". I know Bob, I know *Acraea* butterflies, and I knew what he meant: butterflies in such quantity that visibility was noticeably reduced. He stopped. He did not recognize the species, but if there were that many, it must obviously be common. So he caught a few – maybe just three. He had a fine dinner as planned.

After taking the butterflies off his setting board, he had a rude shock: 1) He could not put a name to them; 2) they really were very different from any *Acraea* he had ever seen. Some months later, on home leave in the UK, he did identify them. It was *Acraea actinotina* Lathy, 1903; one of Bob's specimens is illustrated here.

The species was described from rather further north in eastern Nigeria, on the Anambra Creek, near Onitsha. But Lathy – a most discerning entomologist – had described it as *Telipna actinotina*. Now ... *Telipna* is a genus in the Lycaenidae which has nothing at all to do with *Acraea* (Acraeini, Heliconiinae, Nymphalidae). The differences from other *Acraea* were so strong that he described it as belonging to a completely different butterfly family. That this immediately recognizable butterfly had only been recorded twice, and once in "clouds of butterflies" seemed to be quite unreasonable. There must be more!? I raided the un-curated parts of the Natural History Museum, London (which sometimes takes more fortitude than expeditions in African forests). It took me two days. No more were found. Kim Goodger – responsible for keeping track of the butterfly collections – browsed her computer and asked if I had ever looked at the McNulty collection – drawers 1172-1179 or something like that. I actually knew McNulty, but this collection had been formed when I was about six years old. Many interesting things were there ... **and** a single *A. actinotina*, this one from Sapoba at the western side of the Niger Delta. So on present knowledge, *A. actinotina* is endemic to the entire Niger Delta area, and it is by far the most special to claim such a role. It cements poorer evidence that the Delta was once a forest refuge that generated distinct species and subspecies.

So here we have a butterfly, precisely described after one or two specimens, albeit erroneously as a member of the Lycaenidae, then once seen in astounding numbers, and with just one more found as the result of a pretty intensive museum chase: Three localities, five or six known to be sitting in collections – very strange indeed.

Well, yes ... but perhaps not that strange. This phenomenon happens in other *Acraea* as well. When I first visited the famous Kakamega Forest way back in 1987, as part of field-work for my book *The butterflies of Kenya and their natural history*, *Acraea cinerea* Neave, 1904 was the most common butterfly on the wing. It was everywhere ... by the thousand. Any little puddle was draped in the corpses of unlucky 'mudpuddlers'. Any sweep of the net, to catch something interesting, also contained a dozen *A. cinerea*. But – as Steve Collins had warned me – often you never found a single *A. cinerea* in Kakamega. Since seeing tens of thousands, I never saw again. I had never seen *A. cerasa* Hewitson, 1861 in Kenya till two years later, when I stayed in a sprawling hotel at Meru on the northern slopes of Mt. Kenya. The hotel had been planned with more optimism than commercial acuity, but they did have a swimming pool. Though I am not all that fastidious, the pool had to be cleared of the bodies of dead *A. cerasa* before I took a swim. It was swarming in almost the same quantity as its congener in Kakamega. A final example is *Acraea kraka* Aurivillius, 1893, which was described from the Cameroun Highlands. A population from the Atewa Range (an area with a residual whiff of submontane vegetation in the "upland forests" (700m)) was described as *A. kibi* Usher, 1986 – slightly distinct, but best considered a subspecies of *A. kraka*. Father Theodor Maessen, who lived in Ghana for more than 30 years, came across it first. An entire box of them is the Allyn Museum of Entomology in Florida. I have been on the Atewa Range at least a dozen times – I never saw it. But, just recently, collectors for the African Butterfly Research Institute, Nairobi obtained a long series from Tano Ofin, the only other forest in Ghana with similar attributes.

So an individual field collector can return with his or her verdict: excessively rare or hugely common. But what is actually happening? A recent paper on the much more mundane *Acraea acerata* Hewitson, 1874, living under even more mundane conditions, was studied in depth in Ethiopia by Azeferegne *et al.* (2001. *Journal of Animal Ecology* **70**:1032-1045). The species is a run-of-the-mill *Acraea* that feeds on many plants, but has become a pest on cultivated sweet potatoes *Ipomoea batatas*. A large cultivated area was studied for several years. Despite an equitable climate it had six defined broods of this species a year – not simply a continuous amorphous emergence. During nine months of the survey there were just 10 adults or less on a main survey plot. But it suddenly grew to 5,300 – a factor of more than 500! The main determinants seem to have been rainfall patterns over several generations. The same underlying determinants may have been influencing *A. kraka* and *A. cinerea*.

Most other forest butterflies do not 'explode' (though *Sevenia*-species sometimes do). An interesting paper by Michel Libert (1994. *Revue d'Ecologie (Terre Vie)* **49**:151-175) showed that some 80% of all forest butterflies had regular breeding without huge variations in numbers. In some environments in Ghana, not least the swampy ones, I can say: "I am just going down here to get two males and a female *Bebearia paludicola*" and perhaps one or two *Hallelesis halyma*. And I usually could, too.

Is the moral of this *Hazard* that you should not believe your own eyes? Not at all! But if your eyes see unusual things – and exceptionally even what you see is the absence of things - there is probably some interesting underlying cause. Who knows ... while I am writing this, *Acraea kraka kibi* might just be having a field day on the Atewa Range!— Torben B. Larsen, UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland (E-mail: torbenlarsen@netnam.vn).

History of Devon Lepidoptera recording

There were several lists of Lepidoptera local to various towns in Devon written in the early 1800s, the most notable of these being *A List of some Insects found in Dartmoor, and its Neighbourhood* by R.& C. Tucker, which is associated with *Dartmoor, Descriptive Poems* by N. T. Carrington (1826). This listing is embedded into the Preface, which is 105 pages long. Pages *lxxxiv* to *xciii* list the Lepidoptera and pages *xciv* to *cv* list the Coleoptera; a list of plants is to be found at the end of this edition. A further list produced by W. Turton & J. C. Kingston (1828 or 1830), *Lepidoptera of Teignmouth, Dawlish and Torquay*, is to be found in N. T. Carrington et. al. *A Torquay Guide, Part 2*. As this has no pagination, I assume this is embedded in the Preface of this book, similar to the 1826 book on Dartmoor. I was unable to find this, but found W. Turton & J. C. Kingston (1828 or 1830), *The Natural History of the District of Teignmouth, Dawlish and Torquay, of the Different Species of Animals, Vegetables and Minerals*, which has a section on *Insects including Lepidoptera*; this also has no pagination.

J. C. Dale published (1831), in *Magazine of Natural History* **4**: 265-267, *Insects captured by J.C. Dale in Hampshire, Dorsetshire, Devonshire, Cornwall and Somerset* and Rev. E. Horton (1857) published a list for Martinhoe, near Lynton (*Captures in Devonshire*) which is to be found in the *Entomologist's Weekly Intelligencer* **2**: 149. *A List of Insects taken at Barnstaple* by G. F. Mathew (1858), is in the same publication, **5**: 68-70; 98-100 and 179-181.

J. J. Reading produced his list *Catalogue of Lepidoptera of Devon and Cornwall*, in Plymouth Inst. Trans. pages 41 to 64, part I, (1861-1862); pages 89 to 122, part II (1862-1863) and pages 51 to 155, part III (1864-1865). This featured many species of Lepidoptera, butterflies and moths and referred to the early collectors of that time; strangely enough, it did not list the geometrid moths.

A Natural History of Teignmouth written by W. R. H. Jordan (1874. *Rep. Trans. Devon Assoc. Advmt. Sci.* **6**: 707 to 715, and G.C. Bignell published The Geometrida of Plymouth and its vicinity, published in the Plymouth Inst. Trans. (1877 to 1878) pages 424 to 432.

Edward Parfitt (1820-1893) who contributed many papers for *Rep. Trans. Devon Assoc. Advmt. Sci.*, produced *Fauna of Devon*, which was published in a few volumes of that publication and included a Lepidoptera section in volume 10 (1878), pages 411 to 588. This includes references from the collectors of his day and listed

the butterflies, microlepidoptera and macrolepidoptera known in Devon. G. C. Bignell (1879-1880) produced a *Catalogue of Lepidoptera of the Plymouth District*; this is a manuscript copy (Parfitt, 1878) and was not, as I stated in *Moths of Devon* (2001), published in Plymouth Inst. Trans. This copy has not been found.

G. C. Bignell published *The Pyralidina of Plymouth and its vicinity* (1879), in the Plymouth Inst. Trans. pages 301 to 304, and E. F. Studd published several sections of a list for Oxton, Exeter *Entomologist*. (1893 – 1900), **26**: 15 & 128; **27**: 55 - 57; **28**: 133-134; **29**: 131-134; **30**: 145-146; **31**: 71; **32**: 95 and **33**: 130. As part of these articles, he describes his illuminated moth traps.

One of our most famous collectors, C. G. Barrett (1836-1904), commenced his serious study of Lepidoptera when he was around 20 years old and we find references to his work in the newly formed *Entomologist's Weekly Intelligencer* (1856) and the *Zoologist*. His chief work *The Lepidoptera of the British Islands* was commenced in 1892, and the ninth volume produced in 1905; he was also responsible for the Lepidoptera section in the *Victoria County History: Devon* (1906), pages 208 to 230, which lists all the known species of Lepidoptera in Devon.

Dr. G. B. Longstaff published his *Lepidoptera Observed in the Parish of Mortehoe, North Devon* (second edition, (in 1903), 29 pages and third edition (in 1907), 68 pages; the first edition was probably produced in the late 1890s. H. Lupton produced an account of the Flora and Fauna of the Torquay District in the Torquay Natural History Society (TNHS), with the Lepidoptera section on pages 127 to 134; he was President of the TNHS from 1914 to 1916. J. Walker and H. Lupton produced *Notes on Local Lepidoptera* (1915), a four page document published separately. J. Walker published *Notes on the Local Lepidoptera* around the same time (no date given, but probably around 1930) in the TNHS pages 265 to 275. It was suggested by Mr. Priestly (an active entomologist around 1900) that they should begin a collection of Devon butterflies and moths for the Museum (Torquay); J. Walker reviewed the macrolepidoptera of the Torquay District (1930) and booklets on Torquay Lepidoptera were produced by H. Lupton and J. Walker and sent to other museums and entomological Societies, probably referring to the two documents listed above.

F. R. Elliston-Wright produced his *Braunton. A few Nature Notes* (1926). This included descriptive notes up to page 69 then lists of plants, Lepidoptera (pages 79 to 90) and a list of birds up to page 106. A map of the Braunton area is on the inside back cover. The whole of this book is interleaved with blank pages, presumably to make notes. A further edition was produced in 1932 and is the one that most people have referred to. This has descriptive notes up to page 110 and lists of plants, Lepidoptera (pages 131 to 141) and birds up to page 156, with a map of the Braunton area on the first of several blank pages at the back of the book; the species lists were presumably based mainly on his own observations.

Dr. R. V. Solly produced *The Butterflies and Moths of the Neighbourhood of Exeter* (1932), which included Stoke Woods, Haldon, Dawlish Warren, Stover, Woodbury and Ladram Bay. This was published in The Proceedings of the College Field Club & Natural History Society, Exeter. IFF, 1946, edited by M. G. Palmer,

had a Lepidoptera section on pages 67 to 112 and includes references from the Entomologists of the area, but not from E. Parfitt's work (1878). This was compiled from a card index made by R. J. Burton, President of the South London Natural History Society (1943 to 1944), when he was resident in Ilfracombe. The book encompassed a circular area of roughly a ten mile radius centred upon Ilfracombe, included Lundy Island, and listed many of the Braunton records of Elliston Wright.

J. Heath, whilst stationed at Plymouth during the Second World War, compiled a list of moths and butterflies of Devon (1944 to 1948). There is one copy of a hand written listing entitled *The Lepidoptera of the County of Devon* (1946). From this there were produced two typed copies of the main list which mainly contained records from previous publications. The list included butterflies, macro and micro Lepidoptera and comprised 158 pages including an index. Subsidiary lists include Part 1 - Rhopalocera which has 10 pages, including an index and a *Provisional List of the Lepidoptera of Devon* by J. Heath and F. W. Jeffery and includes all the species in the main list within its 26 pages. The butterfly section was compiled by J. Heath and F. W. Jeffery. Butterfly Conservation, Devon Branch, have an annotated copy of this list which gives fairly extensive localities and information about the scarce migrants.

Engineer, Captain S. T. Stidston, who lived at Ashburton, was the first Secretary and Treasurer of the newly formed Entomological Section of the Devonshire Association which had its Inaugural Meeting on Saturday, 14 August 1948; the idea of putting together an Insect Fauna of Devonshire along the lines of the *Flora of Devon* (1939) was proposed in October of the same year. S. T. Stidston wrote *A List of the Lepidoptera of Devon, Part 1 and Introduction*, which was published in *Rep. Trans. Devon Assoc. Advmt. Sci.* (1952). This work acknowledged assistance from "*Mr. Frank Lees, of Uplyme and Maidencombe and Dr. H. Henstock, formerly of Exmouth and Woodbury, for their long, detailed lists of species taken in their respective areas. Also to Mr. John Heath for the use of his unpublished list*,". A listing of all of the recorders for this work can be found under the References and Sources section. The publication covered all the butterflies and macrolepidoptera seen in the county up to 1952 with references to the old works and entomologists. A list of Additions and Corrections for this was published in *Rep. Trans. Devon Assoc. Advmt. Sci.* (6th edition of the Entomology Section, 1953).

From the time the Entomology Section of the Devon Association for the Advancement of Science (DA) had been formed (1948) and reports of the more interesting species of Lepidoptera seen the previous year were published most years in the Report of the Transactions. McCormick, R. F., (2001) gives a listing of the recorders on pages 293-295, and these were copied from the DA record books which were kept up-to-date by the incumbent recorders.

E. C. Pelham-Clinton, a well known entomologist of his time, moved to Axminster in July 1981 and continued recording everything he saw in the insect world, along with other things in nature. He was responsible for putting the records of the microlepidoptera from two thirds of the county onto record cards and

producing numerous macrolepidoptera records that were put into the DA record books, which are retained by the Recorders in separate books. Unfortunately, he had only spent seven years in Devon when he died in December 1988. He bequeathed his diaries, with his field notes and written records, to the National Museums of Scotland (Edinburgh).

Bristow, C. R., Mitchell, S. H., and Bolton, D. E. published *Devon Butterflies* in 1993. This book contains 151 pages and has dot maps and descriptive text of all the species of butterfly recorded in Devon along with colour pictures of 44 species, a couple of colour pictures of localities, an index and descriptive text. Local lists were coming of age.

I wrote the *Larger Lepidoptera of Dawlish Warren*, which was published in several supplements in volumes **107** and **108** of *Ent. Record.* (1995 and 1996). This contained records I had made personally, species for which there were unconfirmed records that might be correct and a section with records that were highly improbable; the observations in these last two sections were taken from material submitted by the Visitor Centre at Dawlish Warren.

I also produced, in 1997, for the Devon Moth Group, *The Definitive Listing of Species Observed In Devon: Macrolepidoptera, Pyralidae and Plumes*; this had 37 pages and listed all the species of the groups in question with very brief indications of distribution within the county, I was ably assisted with this work and the next by Bob Heckford.

I then wrote Moths of Devon (McCormick, 2001), which included all of the records that had been made so far, with accounts of the previous publications authors' comments, along with sections on Conservation, History of recording, Geology and Migration, along with other topics. This work had 328 pages which included English and Latin indexes, 24 pictures of localities and 24 pictures of moths. No dot maps were included for the species, but one map showed dots of all the sites that had been visited thus far along with a comprehensive gazetteer.

Devon Moth Group was formed in 1996 and the first *Annual Report* (Newsletter 1997), listed all the species that had been seen the previous year. An *Annual Report* has been produced each year with the previous year's sightings of all species being shown with brief details of the more important examples. The 9th edition of this was published in January 2005.

Records for Devon, since 1994 when I started recording in the county seriously, have been stored on a database held on my own computer at my home. Input of records has been around 10,000 to 14,000 a year. I have records of my own that go back to 1960-1990, when I visited the county for species I needed. Lists were always made wherever I went and these were already on the database when I came to live in the county in 1993.— Roy McCormick, 36 Paradise Road, Teignmouth, Devon, TQ14 8NR.

The generic names of the British Weevils (Col.) explained

For the British list I follow Morris, 2003; except in not, for present purposes, splitting up the 'supergenus' *Apion.* names of introduced exotics are mostly omitted. Again, apart from eponyms, the language of derivation is neo-classical Greek, with rare exceptions (*Involvulus, Curcilio* – Latin). Subgenera are ignored.

The most distinctive feature of these beetles is generally the *rostrum* (Latin, 'that which gnaws' – cf. *rodent* etc); its degree of development varies greatly from very short and stout (many genera) to very long and thin (*Curculio*).

A few genera are out of order, which will not matter.

Cimberis and *Anthribus*	no meaning can be assigned.
Platyrhinus	broad nose.
Tropideres	keel neck – from the pronotal keel.
Platystomos	broad mouth (for *Platystoma,* which is preoccupied).
Dissoleucas	doubled, and white; our species is *D. niveirostris* ('snowy beak', to which the name must allude).
Choragus	the leader of the chorus, i.e. dance, in ancient Greek drama; from the insect's saltatory habits. (cf. *Orchestes.*)
Bruchela	probably 'varacious', cf. the family Bruchidae.
Attelabus	the immature stage of a locust (Aristotle).
Apoderus	*apo* 'away from', *deré* 'neck', the pronotum and elytra being well set-off from each other.
Rhynchites	having a beak or snout. (The suffix is the same as our *-ite.*) *Lasiorhynchites* is 'hairy *Rhynchites*'.
Involvulus	hardly clear, but seems intended for 'little (inward) roller' (? of leaves), though actually our two species develop in berries (*Crataegus, Sorbus*).
Lasiorhynchites	hairy or shaggy *Rhynchites* (see next but one).
Neocoenorrhinus	new *Coenorrhinus* (subgenus of *Deporaus*).
Temnocerus	'cut-horn', perhaps referring to division of antennal segments.
Byctiscus	'a little show-off or blusterer', from the bright colouring. (Same diminutive suffix in *asterisk, basilisk.*)
Deporaus	no meaning can be assigned – an invented name.
Apion	a pear, from the general shape.
Ferreria	an eponym replacing *Raymondionymus* (for which we may be thankful).
Archarius	nothing suggests itself. The better-known name, *Balanobius,* is 'acorn dweller', and it is a pity it cannot prevail.
Curculio	Latin for weevil; the primary meaning is 'glutton'. Formerly *Balaninus* 'of acorns'.
Acalyptus	uncovered, probably referring to the pygidium.
Anoplus	unarmed (Greek *hoplon,* a weapon); from the complete lack of tarsal claws unique among our weevils.
Anthonomus	browsing on flowers (certain species can be destructive).
Brachonyx	for *Brachyonyx* 'short claw'.
Miarus	stained, defiled, corrupt. (No reason for name.)
Rhinusa	Greek stem *rhin-* 'nose' (cf. *rhinoceros*).
Orchestes	a dancer or leaper. (Our 'orchestra' is anciently 'dance floor'.)
Pseudorchestes	false dancer, because here the power of leaping is only slight, or all events less.
Rhamphus	a beak, though the rostrum is held folded under the body when not in use.
Rhynchaenus	terrible beak(!). Whether Clairville intended this literal sense may be doubted.
Tachyerges	a rapid worker, or fast-working.
Smicronyx	small claw.
Pachytychius	thick *Tychius* (q.v.)
Orthochaetes	(having) straight setae.

Pseudostyphlus	'false' and 'hard, rugged, rough'; the simple *Styphlus* is an exotic genus.
Sibinia	a hunting spear; application fanciful.
Tychius	derived from *tychè* 'chance'; equally fanciful.
Bagous (-ō-us)	'An eunuch at the Persian court' (Smith's Latin Dictionary).
Baris	a sort of raft or primitive boat; the genus is semi-aquatic.
Limnobaris	'marsh or lake *Baris*'.
Amalus	weak.
Calosirus	'beautiful pit', with reference to some structural character.
Ceutorhynchus	'hidden beak', the rostrum being tucked under the body in repose. (The first element should have been *ceutho-*, related to our 'hide'.)
Coeliodes	'of hollow aspect'; reason for name unclear.
Coeliodinus	formed from the last (very closely allied to it).
Datonychus	first element obscure, second *onyx* 'a nail or claw'.
Drupenatus, Ethelcus, Glocianus	a trio of inventions by Reitter.
Hadroplontus	stout or strong weapon (*hoplon*) plus a formative suffix.
Micrelus	arbitrary extension of *mikros* 'small'.
Microplontus	'small weapon', cf. *Hadroplontus* above.
Mogulones	'troublesome, difficult' (which certainly does not apply to any of our three species). The first syllable alone meaningful.
Nedyus	'a paunch, belly': the beetle is more convex beneath.
Parerhelcus	'alongside *Ethelcus*", a neighbouring genus.
Poophagus	'eating or feeding on *Poa*", earlier considered the foodplant.
Sirocalodes	'resembling *Calosirus*' (above), with the latter's elements transposed.
Stenocarus	narrow head.
Tapeinotus	humbled, brought low (but the weevil is far from obscure).
Thamiocolus	first element 'crowded close', second apparently 'segment'.
Trichosirocalus	hairy *Calosirus* (see above).
Zacladus	'much branded', a name of doubtful application.
Mononychus	(having) one claw (to each tarsus) – a most unusual character.
Eubrychius	a good sailor, from its surface-swimming character.
Neophytobius	'new plant-dweller' (genus split off from *Phytobius*).
Pelenomus	a new name for the familiar *Phytobius,* of doubtful meaning.
Phytobius	'plant-living', formerly *Litodactylus.*
Rhinoncus	'swollen nose', from a thickening of the rostrum.
Rutidosoma	for *Rhytidosoma,* 'wrinkled or shrivelled body'.
Cossonus	nothing clear can be suggested.*
Rhopalomesites	'*Mesites* with a club' (reference to antennae of femora?)
Caulophilus	'stalk-loving' (Latin plus Greek), from its habits.
Pselactus	seems to combine the idea of groping (as in *Pselaphus*) with that of the seashore (aktē); the beetle lives in decaying breakwaters.
Pseudophloeophagus	literally 'false bark-eater'.
Stereocorynes	solid club, with reference to the antennae.
Pentarthrum	five-jointed (of tarsi).
Macrorhyncolus	long or large *Rhyncolus.*
Rhyncolus	for *Rhyncholus,* but second element obscure or arbitrary.
Phloeophagus	bark-eating.
Cryptorhynchus	hidden rostrum.
Acalles	without beauty.
Sternochetus	probably 'with bristles (chaetae) on the breast (sternum)'.
Gronopus (=*Alophus*)	'written on'; fresh specimens are prettily variegated.
Neliocarus	it seems barely possible to extract a meaning from compound.
Strophosoma	'round body' (*strophos* 'a turn').

Atactagenus	for *Atactogenus* 'out of order'; perhaps meaning 'anomalous' but the weevil is not noticeably so.
Philopedon	ground-loving.
Barynotus	'heavy back', from the robust build.
Omiamima	'mimicking *Omias*', an allied genus.
Otiorhynchus	'snout with little ears', from the slight dilatations at apex of rostrum.
Caenopsis	'new look'; may be interpreted according to taste.
Peritelus	'around the end', with reference to scaling?
Phyllobius	living on leaves.
Liophloeus	'smooth bark'; from its appearance.
Polydrusus	'much dew', assuming *-drusus* to be intended for *-drosus*; the often lustrous scales may have suggested the name.
Barypeithes	hard to persuade (to move?)
Brachysomus	for *Brachysoma,* 'short body'.
Sciaphilus	shade-loving.
Sitona	a corn merchant. The form *Sitones* was much in use earlier.
Tanymēcus	'extended in length', from its shape.
Trachyphloeus	'rough bark', from the surface appearance often presented.
Cathormiocerus	'necklace-horned', i.e. with the funicular segments moniliform.
Tropiphorus	keel-bearing.
Hypera	seems intended for 'raised above', but why?
Limobius	for *Limonobius,* meadow-living'.
Larinus	fat or fatted, rich.
Lixus	no meaning can be assigned.
Bothynoderes	'neck (pronotum) with a pit or fovea'.
Cleonis (*Cleonus* auct.)	famous; cf. Greek names in *-cles,* e.g. Pericles.
Coniocleonus	'dusty or powdery *Cleonus*', from the natural dust secreted on the surface.
Rhinocyllus	'bent or crooked nose' (rostrum), with the epithet awkwardly placed second.
Magdalis	a crumb (not very descriptive!).
Liparus	fat, rich (these are large weevils).
Leiosoma	smooth body.
Mitoplinthus	'thread brick'; the reader may make what he will of this!
Anchonidium	a little halter (but why?).
Hylobius	living on wood or in woods.
Lepyrus	a shell, husk, or rind (reason for name obscure).
Syagrius	a wild pig or boar.
Pissodes	resembling pitch (of surface appearance).
Trachodes	appearing rough.
Orobitis	feeding on the plant *Orobus.*
Scolytus	an old name, but not classical, and meaning can be assigned.
Pityophthorus	pine destroyer.
Cryphalus	tending to hide (cf. 'cryptic').
Ernoporus	burrowing in shoots.
Ernoporicus	a mere extension of the last, for distinction.
Trypophloeus	burrowing in bark.
Crypturgus	hidden worker, or working secretly.
Dryocoetes	lying in oak trees.
Dryocoetinus	a mere extension of the last, from which it is barely distinct.
Lymantor	a destroyer.
Taphrorychus	a gravedigger, from the workings under bark.
Xylocleptes	wood-thief.

Ips	a woodworm (like *Cis*).
Orthotomicus	straight *Tomicus* (see below).
Pityogenes	breeding in pine or fir.
Xyleborus	wood-eating.
Trypodendron	boring in trees. (*Xyloterus*: boring in wood).
Hylesinus	wood-destroying or -destroyer.
Hylastinus	an extension of *Hylastes* (below).
Kissophagus	ivy-eater.
Leperisinus	first element an invention of Reitter's, second 'destroyer'.
Pteleobius	living in or in lime trees.
Hylastes	a woodman or forester.
Hylurgops	resembling *Hylurgus*, a wood worker.
Phloeotribus	literally bark-rubber, i.e. damaging bark.
Phloeosinus	bark-destroyer. (cf. *Sinodendron, Hylesinus*.)
Polygraphus	'much writing', from the broad-galleries under bark (fanciful resemblance).
Tomicus	a cutter, for the same reason.
Dendroctonus	tree-killing or -killer.
Xylechinus	'wood hedgehog' (somewhat fanciful).
Tanysphyrus	long hammer (hardly clear).
Platypus	broad foot (but it is the tibiae, not the tarsi, that are broad).

— A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

* The editor has suggested that the name *Cossonus* might be derived from *cossus* – the larva from under bark eaten by the Romans as recorded by Pliny the Elder, *c.*60AD in his *Naturalis historia*.

Observations on adult Fiery Clearwing *Pyropteron chrysidiformis* (Esper) (Lep.: Sesiidae) in south-west France

Although extremely localised and afforded legal protection in the UK, *Pyropteron chrysidiformis* is far more frequently encountered in the western part of Europe, its distributional range extending south to Gibraltar and east to Central Europe and including all of Italy. In the Balkans, it is replaced by the superficially similar *P. minianiformis* (Freyer). It is an extremely variable species, and this recently gave us some cause for concern as far as our local population at Graddé was concerned. Laštůvka & Laštůvka (2001. *The Sesiidae of Europe*. Apollo Books) record wingspans in the range 17 to 26 mm. In additional to typical examples, all of which had a "fiery" coloured vertex, smaller forms, with a wingspan as small as 13mm and often with the head covered in entirely black scales, are occasionally encountered. Following a moth-recording trip here by Colin Plant, Phil Jenner and Rachel Terry, a sample of both sexes of the various forms was taken away by Colin Plant for closer investigation; all hopes of a cryptic new species were dashed when, after he had examined the genitalia, he pronounced them all to be *chrysidiformis*!

We first noted the species here some years ago, when adults were seen resting on Pyramidal Orchids *Anacamptis pyramidalis*. During 2004, the first sighting was on 13 June, when a large example was noted on a thistle, not in flower, at 19.30 hours (French time) in an air temperature of about 23°C. The next day we visited a field a few hundred metres away. The field had not been cut, so the grass in places was over a metre tall. The time was from 14.00 to 15.00 hours and the temperature in the shade was approaching 28°C. The number of Field scabious *Knautia arvensis* plants in flower was enormous, well over a thousand, and this, coupled with something like 750 Pyramidal Orchids in flower made the field a sea of purple. *P. chrysidiformis* was present in large number – more than 30 were counted almost immediately, but in a field of 0.80 hectare, I am sure a few were missed! Most were settled on the scabious, but a large proportion was seen on the orchids raising and lowering their abdomens continuously, for well over a minute. The smaller examples seemed to seek out the lower flowers of the scabious, making it difficult for us to see them among the grass. It may be that the moth is attracted to the orchids by their colour which is near enough the same as that of the scabious. We have never seen any other insect on *Anacamptis pyramidalis* although moths and butterflies are their popularly reported pollinators.

Laštůvka & Laštůvka (*op. cit.*) give the flight period as being from May to August. Here, we normally record the moths as a single generation of adults — between 29 May (2001) and 18 July (1999). However, during 2005, we for the first time noted adults during August at *Lavendula* flowers, although they were rather worn and so still supportive of a single prolonged generation. The year 2004 was only the second time that we have seen flowering in *Anacamptis pyramidalis* so late in the year. It usually occurs between the earlier flowers of Man/Fly/Spider orchids and the somewhat later Lizard Orchid, but this year we have the Pyramidal and Lizard Orchids side by side, hence the clearwings finding the Pyramidal Orchids (late) with the Scabious (normal).

Throughout the years we have also recorded Fiery Clearwings locally on other flowers. The full list is Prickly Sow Thistle *Sonchus asper* and Santolina *Santolina chamaecyparissus* (both Compositae), Field Scabious *Knautia arvensis* (Dipsacaceae), Ground Elder *Sambucus ebulus* (Caprifoliaceae), Lavender *Lavandula augustifolia* (Lavandulae) and Pyramidal Orchid *Anacamptis pyramidalis* (Orchidaceae).

Local larval foodplants are unknown. We have noted a few plants of Fiddle Dock *Rumex pulcher* in the garden, but these are pulled out when seen. In the immediate environs, however, a great variety of other *Rumex* species is available.— MICHAEL and BRENDA MARNEY, Graddé, 81140 Campagnac, France (e-mail: marney.michael@wanadoo.fr).

BOOK REVIEWS

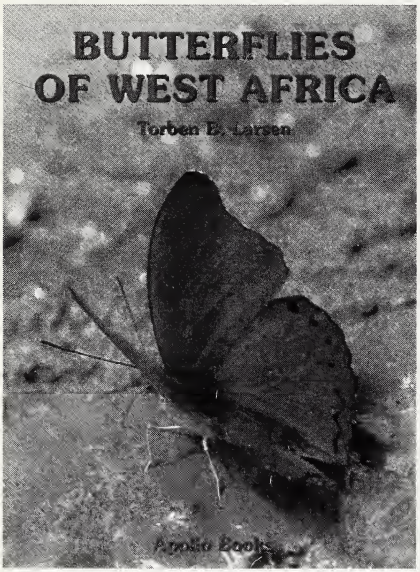
Die Oecophoridae s. l. (Lepidoptera) Mitteleuropas by **Zdenko Tokár, Alexandr Lvovsky & Peter Huemer**. 120 pp., 235 x 168 mm., hardbound, ISBN 80 969052 2 8. Published by Slamka, 2005. Available from the publisher at Raĉianska 61, SK-83102, Bratislava, Slovakia (f.slamka@nextra.sk: http://home.nextra.sk/fslamka). 40 € (approx. £27.50)

The Slovakian publishing house that is Frantisek Slamka is fast becoming one that no serious lepidopterist can afford to ignore. Amongst several existing publications, Slamka has produced Noctuids of Central Europe (Nowacki, 1998) and, a year earlier under his own authorship, the pyralids of the same area. The latter work in particular has become an immensely important text for western European pyralid specialists, not least because it is the only book to illustrate the genitalia of many species that are also found in Britain. This latest production, the Oecophoridae, follows in the tradition and does not disappoint; given the high standing of the three authors this is scarcely surprising. The work covers the Chimabacidae, Oecophoridae, Amphisbatidae and part of the Depressariidae (Tribes Orophiini and Cacochroini). A total of 109 species are included. These comprise 86 that are found in the central European area (Germany, Luxembourg, Switzerland, Austria, Hungary, Slovakia, Czech Republic, Poland and parts of Holland, Belgium, France, Italy, Slovenia, Croatia, Bosnia-Herzegovina, Serbia, Montenegro, Rumania, Ukraine, Belarus and Lithuania) as well as another 23 from adjacent countries. The work is of direct interest to British lepidopterists.

The text is concise, giving data on biology, distribution, habitat, flight period and identification. *Pleurota cyrniella* Mann, 1855 is synonymised with *Pleurota aristella* (L., 1767) and *Anchinia dolomiella* Mann, 1877 is synonimised with *Anchinia grisescens* Frey, 1856. One small drawback is that the text is in German, but the book will be sought after for the fact that almost all the species are illustrated by colour photographs of set specimens, the individual pictures arranged in three columns and seven rows to give 21 on each page. In the review copy the pictures are clear and the colour reproduction is accurate making comparison with specimens practical. Both male and female genitalia are drawn clearly for all species.

There are, of course, those who prefer paintings and those who prefer photographs when it comes to identification of moths; I should make it clear that I tend towards the latter camp when I suggest that this book will be useful to those who have already bought volume 4(1) of *Moths and Butterflies of Great Britain and Ireland*. Though there is no intended criticism of the latter work, which treats the British species in far greater detail, nobody who studies micro-moths at all seriously would be likely to place their trust in a single publication – in fact the more books the merrier as far as I am concerned. Most will contain snippets of important information that is not available in the others. At the remarkably low price of around 27 pounds, this book is surely well worth getting hold of before it goes out of print!

Butterflies of West Africa by **Torben B. Larsen**. Two volumes: text, 595 pp., single colour plate and innumerable b & w illustrations; Plates, 270 pp., 125 colour plates. Hardbound, 285 mm x 210 mm. Apollo Books, 2005. ISBN 87-88757-43-9. DKK 1280 (approx. £116) excluding postage.



Attempting to condense almost 900 pages into a brief review, while at the same time conveying some impression of the experience, sheer effort and dedication the author has poured into this book, is not without challenge. This reviewer is not acquainted with the butterfly fauna of West Africa, but it is reasonable to assume that few readers will have in-depth knowledge either! Therefore, this will not be a critical appraisal of some of the views expressed, but more a journey through the book itself. However, readers familiar with earlier works of Torben Larsen will not be surprised to learn that he continues to express his views with customary authority. For example, when writing of *Neptis saclava marpessa*, "Carcasson's (1981) statement that it occurs in West Africa is definitely wrong", typifies an uncompromising approach. The magnitude of the project faced by Torben Larsen is perhaps best summed up by the first paragraph of his introduction: "This book attempts to summarize all that is known about the nearly 1,500 butterfly species known from West Africa, the fifteen countries that stretch from Senegal and Mauritania on the Atlantic to Nigeria and Niger in the east, touching also on the extreme western parts of Cameroun (Mauritania, The Gambia, Senegal, Guinea-Bissau, Mali, Guinea, Sierra Leone, Liberia, Burkina Faso, Côte d'Ivoire, Ghana, Togo, Bénin, Nigeria and Niger." If this were not enough, much of the manuscript work took place in over twenty countries, spanning more than a decade.

The choice of two volumes is an astute one, with every species allocated a unique reference number common to both volumes – so, with both volumes open at a specific species number, it is an easy matter to compare, say, a written description of a species in Volume 1 with its corresponding photograph in Volume 2.

Text is arranged in two columns, enabling comfortably easy reading and fast scanning to salient points. This is essential, for the book is packed with detail – with many pages (text volume) having no illustrations. Print quality (choice and clarity of type-face and quality of colour plates) is excellent and my only quibble concerns the reproduction of the Vegetation Map of Africa which, on my copy at least, shows somewhat less than crisp text.

Following a foreword by Steve Collins (African Butterfly Research Institute, Nairobi), a preface by Dick Vane-Wright (BMNH, London) and three pages of acknowledgements (an indication in itself of the extensive consultation carried out by the author) there is a highly informative, as well as very readable 33-page Introduction covering *World Butterflies and Africa*. This includes sections on *The evolution of butterflies/The main biogeographical regions/World butterfly numbers/ World butterfly numbers by main biogeographical regions*), *African butterflies and their worldwide affinities* (comments on distribution by

subfamily/tribe/genus and species, followed by a table listing worldwide distributions by family/subfamily/tribe/genus), *Broad African butterfly biogeography*, leading into a *History of butterfly collecting in Africa* which provides an insight into how much (or little) is known from the various countries, *Ecological biogeography*, *Migration*, *Threats and extinction*, and *Conservation* are the section headings dealt with over the next seventeen pages.

The Systematic Part includes an explanation of the approach used in describing each of the 1,478 species present in the book. In general, about six species are covered per page opening, with comments on Identification, Subspecies (where applicable), Habits, Early stages and Distribution. The introduction to the systematic part also has a useful glossary and gazetteer – these last two sections are somewhat 'buried' in the wealth of text, rather than placed towards the front (or end) of the book, but at least their headings are clearly listed in the contents table, so can be quickly found as necessary. An extensive, seven-page table lists the Afrotropical butterfly genera, with an indication of their geographical ranges. We are then treated to entertaining descriptions on each of the species, in which the author liberally stamps his authority and anecdotal style in such a way that one is left wanting more. It is unusual in such comprehensive reference books to encounter such an approach – but it works. Readers of this journal will, of course, be well acquainted with the author's style from his regular feature 'Hazards of Butterfly Collecting'. Of the 1,478 species listed, 18 are dealt with in an Appendix, which takes the form of a paper by Steve Collins and Torben Larsen entitled '*New species and subspecies of African Butterflies*'. The treatment of each of these species follows the now familiar format used throughout the book. For those who find bibliography sections of interest (and I confess to being among them) there are no fewer than 16 pages of references, though not all are cited in the book. An index of scientific names completes the text volume.

Most of the species described in the text volume are illustrated in the Plates volume; exceptions are specimens in a condition too poor for useful photography, or where the text informs that identification can only be confirmed by genitalia examination. Butterflies are shown at natural size, though larger species are illustrated with the right-hand sets of wings only, in order to conserve space. Undersides are included where they are necessary to assist identification. The volume concludes with an index to the plates which, in common with the text volume, are indexed by the species' number, not by page number.

In his own introductory remarks, Torben Larsen comments that he thought of starting the project with a slogan: "If we are going to study West African butterflies, we had better start studying them now." He refrained from adopting that slogan (to his great surprise he found that no butterfly in West Africa is yet extinct) so I'll introduce one of my own while, at the same time, again quoting from the book..... "I saw it in Korup as well." Those who delve to any extent into the text will recognize this oft-repeated phrase and will, as I did, come to look forward to it with some anticipation and affection! This is not only a major work, it is a reasonably affordable major work – thanks to a degree of sponsorship and to the fact that the author did much of the basic work himself, including photography and arrangement of 3,900 butterflies on 125 plates. Of course, it is not a field guide, but no book with such a wealth of data could ever be. Nevertheless it will appeal to a wide audience, because neither is it turgid; it is written in typical Larsen style, which effortlessly blends the anecdotal with the scientific. Doubtless, it will remain the definitive work on West Africa butterflies for many, many years to come and, as with his earlier book "Butterflies of Kenya and their Natural History", will be used as a baseline for future conservation and ecological studies.

Apollo Books are to be applauded in producing a book of immense value, thereby further enhancing their reputation as one of the foremost publishers of entomological books.

EDDIE JOHN

EDITORIAL NOTICES

CONTENTS AND SPECIAL INDEX, 2005

The *Contents and Special Index* booklet for volume 117, which was published in six parts during the year 2005, should be included in the envelope with Volume 118, part 1 (January 2006); if it is not, please contact the Treasurer (**not** the Editor) at the address inside the front cover of this journal. The booklet is designed so that it may be bound in the front of the volume. For the production of the Special Index we are indebted to Catherine Wellings and her son William, of Harrogate, North Yorkshire, who bravely volunteered to take on the task of Special Indexer. For those who may still be wondering, there was no Special Index for volume 116 (2004), although the Contents section was supplied this time last year.

2006 SUBSCRIPTIONS

We are pleased to be able to report that it is not necessary to raise the individual subscription rate for 2006 and so this will remain at £28. To offset slightly raised costs we have instead opted to increase the rate for institutional subscribers, such as universities and libraries; we regard this as fair, since those copies are read regularly by more than one person.

At the same time as maintaining this low subscription are we are also managing to include colour plates in three of the six issues per year at no cost to authors. My mail bag suggests that this is a move that is welcomed by subscribers.

In order to allow us to maintain the low subscription rate into the future, we urge people to renew their 2006 subscriptions soon (most have already done so) and to make it an aim to sign up at least one new subscriber. In fact why not take out a gift subscription for someone now? Every penny we receive is spent on producing the journal – none goes anywhere else – so it is clear that the more money we get in the more pages we can produce. And every £500 pound donation buys us one more page of colour plates! More details about making a donation or bequest or offering sponsorship can be found on our web site at *www.entrecord.com*.

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Editorial Notices

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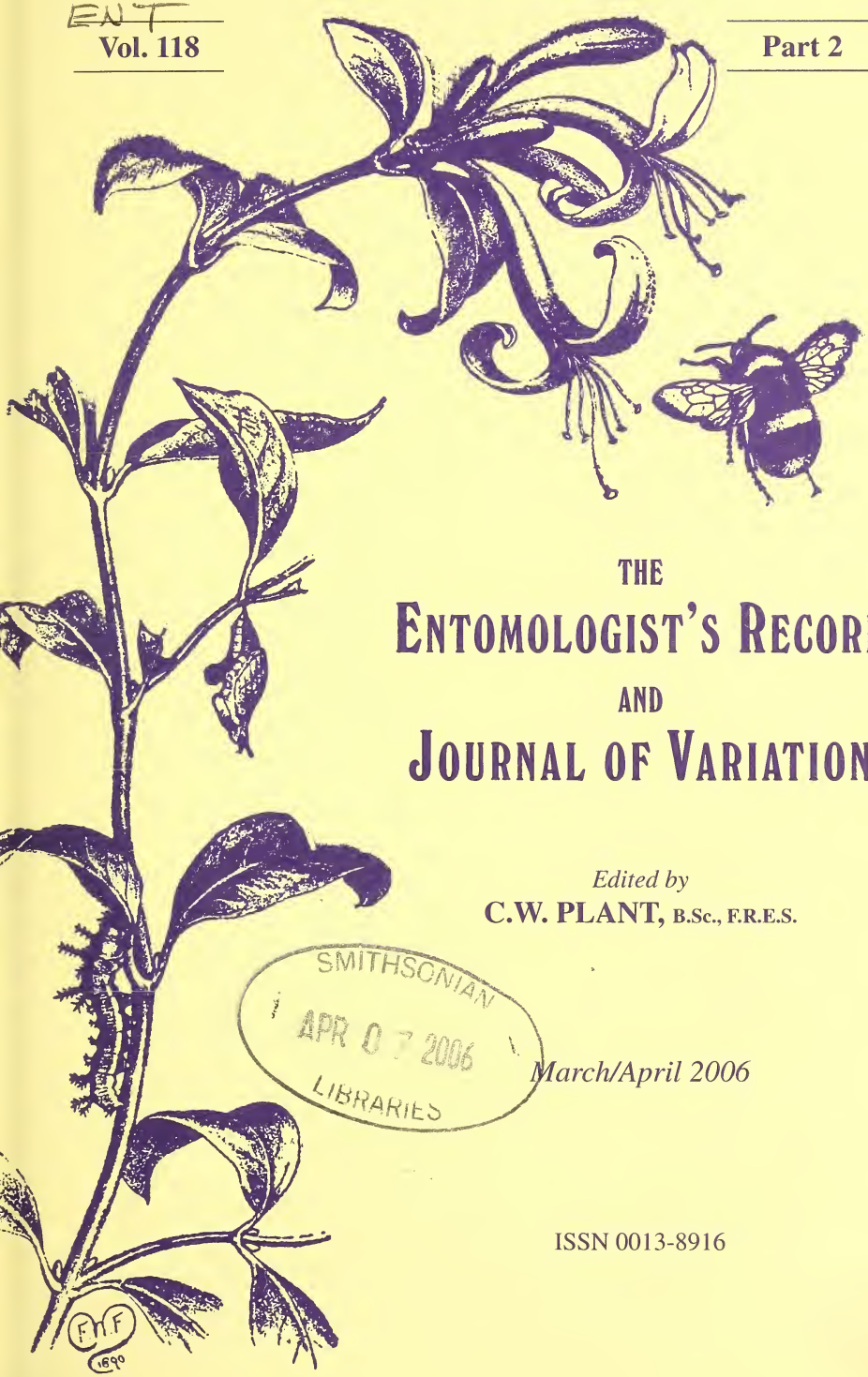

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Editor

C.W. PLANT, B.Sc., F.R.E.S.

14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

Registrar

R.F. McCormick, F.R.E.S.

36 Paradise Road,
Teignmouth, Devon TQ14 8NR

Treasurer

C.C. Penney, F.R.E.S.

109 Waveney Drive, Springfield,
Chelmsford, Essex CM1 7QA

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- This journal publishes **peer-reviewed papers** and shorter **Notes** that are reviewed by the Editor. Contributions are accepted on merit, with no regard whatsoever to the occupation or standing of the author. All contributions should bear the name and postal address of the author(s), but titles or honours are not permitted and will be removed. One e-mail address may also accompany the contribution. First time authors and non-subscribers are welcome to send material for publication. We are able to include colour photographs from time to time at no cost to the author(s). Good quality monochrome photographs are always welcomed.
- The journal is concerned with **British Lepidoptera** (moths and butterflies). We also accept contributions on **British Coleoptera** (beetles), **British Diptera** (flies) and **other groups** at the Editor's discretion. We also print **Subscriber Notices** at no cost on behalf of current subscribers; non-subscribers pay a fee for this service. We also publish **Reviews of entomological books** and other publications relating to all aspects of world entomology if these are sent to the Editor at no cost to him. It is our policy not to accept unsolicited book reviews from third parties.
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- **Papers** should be at least 2000 words in length. Acceptance is not automatic. They will be peer-reviewed by two referees. Authors must be prepared to make modifications suggested by the referees. Papers must cover their subject matter to a far greater depth than Notes and should present original material or a broad-based review of existing knowledge. Descriptions of new species may be submitted. Authors of papers are expected to follow the house style and conventions as closely as possible. The Editor reserves the right to convert papers into Notes.
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- We accept all formats from hand-written notes upwards. However, we prefer submissions via e-mail, or on CD/floppy diskette. Files must be in a PC-compatible format that is readable by Microsoft Word 2000. Originals are required for all photographs, drawings, diagrams, graphs, histograms and similar, though Tables may be incorporated into word processor files. For details, visit the web site or contact the Editor direct.

OBSERVATIONS ON THE LIFE HISTORY OF *ACANTHOPSYCHE ATRA* L. (LEP.: PSYCHIDAE)

PHIL STERLING

Environmental Services, Dorset County Council, Colliton Park, Dorchester, Dorset, DT1 1XJ.

Abstract

Observations on rearing *Acanthopsyche atra* L. (Lep.: Psychidae) from ova, and of adult behaviour, are presented. The species exhibits strong protogyny, a behavioural mechanism believed to prevent inbreeding, as might be expected in a species with poor ability to disperse. The moth is considered to be overlooked rather than a genuine rarity. The cases, and male and female adults are illustrated in colour.

Introduction

The life histories of the British species in the family Psychidae, with a few exceptions such as *Pachythelia villosella* (Ochs.) (Heath, 1946), are relatively poorly understood. However, what we do know suggests a diverse range of behaviours and rather plastic morphology between species contributing to their reproductive strategies, in comparison with other families of moth in Britain. Scanning the text of Volume 2 of *The Moths and Butterflies of Great Britain and Ireland* (Hättenschwiler, 1985) we see that the females of most, but not all, species have abandoned wings and must rely on different mechanisms for dispersal of their progeny.

In this vein, perhaps the most bizarre account is that of *Acanthopsyche atra* L., brought to our attention in British literature by Jacobs (1958) and Hoffmeyer (1970), both reporting the same observations made in the 1950s by Hoffmeyer's Danish colleague, P.L. Joergensen. In summary, wingless females of this species leave their cases a few days after mating; when such females were fed to captive robins (*Erithacus rubecula*), viable ova survived the birds' digestive system and larvae hatched from the faeces a fortnight later. Whilst not many hatched given the number of females ingested, the observation offers the possibility that birds are involved in dispersal. It would appear that part of the female's strategy is to get eaten; this is a peculiar reversal of the dominant strategy amongst Lepidoptera which have spent millions of years of their evolutionary history honing their morphological and behavioural avoidance mechanisms to avian predators.

I have spent some time on the Dorset heaths trying to find *A. atra*, so was pleased to come across two cases of this apparently very local moth on Upton Heath, Dorset (O.S. grid reference SY 9893, VC 9) on 6 June 2003. Both were fixed low down, no more than 10cm from the ground, one on a heather stem, another on a wooden post. By chance the neighbouring post had a case of *P. villosella* attached somewhat higher up (c. 50cm). The size difference between cases of the two species was immediately apparent, and those of *A. atra* were adorned with shorter and more uniformly sized fragments of heathers and grasses. The size range of cases of the species is given in Hättenschwiler (*loc. cit.*).

On closer examination I noticed that one of the *A. atra* cases was empty, but the other appeared to have a female within and with a hand lens I thought I could make out that this was her posterior end. I did not realise the significance of these observations at the time.

The two cases were amongst humid heath, in an area where cross-leaved heath *Erica tetralix* and purple moor-grass *Molinia caerulea* were co-dominant and heather *Calluna vulgaris*, was frequent. Barrett (1895) suggests that the moth is usually confined to sandy locations; whilst the underlying minerals of Upton Heath are sands and clays, there was no bare sand in the vicinity of where I had found the *A. atra* cases, although there were areas of bare peaty soil which had been poached by grazing animals. I suggest that the moth has little habitat preference other than for dry or humid heathland.

Notes on rearing

I kept the female in her case in a container for over three weeks and was then surprised to observe that many larvae in tiny cases were crawling over the old case. I estimated that there were probably about a hundred of them. At no time could I see that the female had laid eggs, and I assume the larvae had hatched within her body.

I set up a large plant pot containing a living plant of heather and bristle bent grass *Agrostis curtisii* and placed the larvae on the plants, covering the whole pot in a fine mesh sleeve. I kept the plants watered regularly.

Between July and September, the young larvae and their cases were rarely seen and must have been at the base of the plants. Occasionally I saw a larva eating green grass and when I introduced fresh leaves of deciduous shrubs such as plum *Prunus domestica*, and birch *Betula pendula* these were nibbled. However, once these leaves had wilted and changed colour they were eaten more readily, usually from the edge of the leaf. The cases remained small throughout the summer, and by mid-autumn had reached no more than 1 cm in length.

Over the winter it was hard to find any case and it was not until the end of April that cases were again visible, larvae crawling to the tops of stems briefly before disappearing again. It appeared that around 40 cases had survived their first year.

Although the heather and grass plants had survived and may have been eaten, I regularly introduced fresh plum leaves and observed that once wilted, these were devoured. Feeding was apparent between April and October during which time the cases were increasing in size and being adorned with fragments of heather and other tiny twigs. No plum leaf litter was incorporated into the case. By mid-autumn it was reasonably clear which cases would produce male and female moths; those of the males had extended the distal end of the case into an opaque dirty white silk tube, largely unadorned (Figures 1 & 2). Throughout summer and autumn, cases were rarely obvious, the larvae spending much of their time hiding low down amongst the leaf litter and near the base of the plants.

Cases were fixed very low down amongst vegetation during the second winter and were hardly visible at all. By early April, cases began to reappear and had moved up

the standing vegetation and sleeve to between 5 cm and 15 cm to fix for pupation. I did not observe any feeding during this time, nor did I see any further extension of silk tubing to the cases of males. In total just under thirty larvae of the forty which had survived the previous winter had fixed. I put all these cases into a plastic container to await emergence.

Observations on the adults

Adults began to emerge in early May and I was surprised that for the first two weeks it was only females that appeared. Actually, emergence was not obvious. From time to time a pale brown sclerotised structure appeared at the open end of several cases, and a paler structure at the end of a few, but any disturbance, such as taking the lid off the container, caused the adults to retreat into their cases.

Figure 1. Male case of *Acanthopsyche atra* (L.)

After only a day, one unmated female wriggled out of her case and lay on the floor of the container (Figure 3). On close observation I could see that the adult had no appendages at all, and no scales. The sclerotised structure I had observed emerging from the distal end of the case was the head and thorax, and the paler structure the genitalia, which were the same colour as the abdomen. The adult female looked and behaved just like a fly maggot; she was creamy in colour and moved only slowly by a weak peristalsis from anterior to posterior. Perhaps this would explain why

Joergensen had said that the females dropped to the ground where they were easily discovered by birds. The behaviour and colour could not offer any camouflage against the darkness of peaty soils.

I thought for a while that none of the males might emerge so on 9 May I took a number of females to Upton Heath to see if they would assemble males. The weather was fine and sunny but with a cool breeze, and I was on the heath between 12:45 and 13:45 BST. I placed the box in sunshine at the top of a heather bush and carefully removed the lid. After a few minutes some females appeared at the open end of the cases and very shortly afterwards males arrived. In any one area only one or two males were assembled, but repeating the assembling method across various parts of the heath almost always produced at least another male. This suggested that males were at low density but were widespread on the heath.

Figure 2. Female case of *Acanthopsyche atra* (L.)

Between 13.45 and 14.45 I also spent a short while on both Canford Heath in Poole and Winfrith Heath near Wool (both in VC 9) and was able to assemble a male at each, demonstrating the presence of the species on these heaths.

I became intrigued by how the male would mate with the female, as it was the head and thorax of the female that I saw at the open end of most cases. It appears that the male has an extraordinary elastic body and musculature. I observed he was able to extend his abdomen several times its resting length, and insert the full length

of this long body into the female's case, where presumably mating took place. I also noted that the male did not have to extend his abdomen so far to mate with those females presenting genitalia at the open end. Sadler (1969) noted that it was the 'brown shiny head' of the adult female of *P. villosella* that was visible at the open end of the case, and Hoffmeyer (*loc. cit.*) refers to a photograph of a male of *P. villosella* post-copulation, commenting on how 'much elongated' was his abdomen. This suggests a very similar mating technique in the two species.

It was not until 14 days after the first female had emerged, and well after the majority had done so, that the first male appeared from my cases in captivity (Figure 4). In the next 10 days a number of males emerged, usually some time during the main part of the day, though I observed males emerging at least twice in the early evening. Most males emerged whilst I was at work and were severely damaged by the time I saw them. They seemed to spend much of their time flying in the container.

Figure 3. Adult female *Acanthopsyche atra* (L.) showing the peristaltic contraction part way along the abdomen.

This delayed emergence of the male is believed to be an example of protogyny, a behavioural phenomenon known in the entomological world where males emerge later than females helping to minimise the risk of inbreeding (in protandry, males emerge before females). Protogyny could be advantageous to *A. atra*, a species which would appear to have poor powers of dispersal in space (save via possible predation of the adult female) and where the likelihood of mating with siblings would be enhanced without delayed emergence of one or other sex.

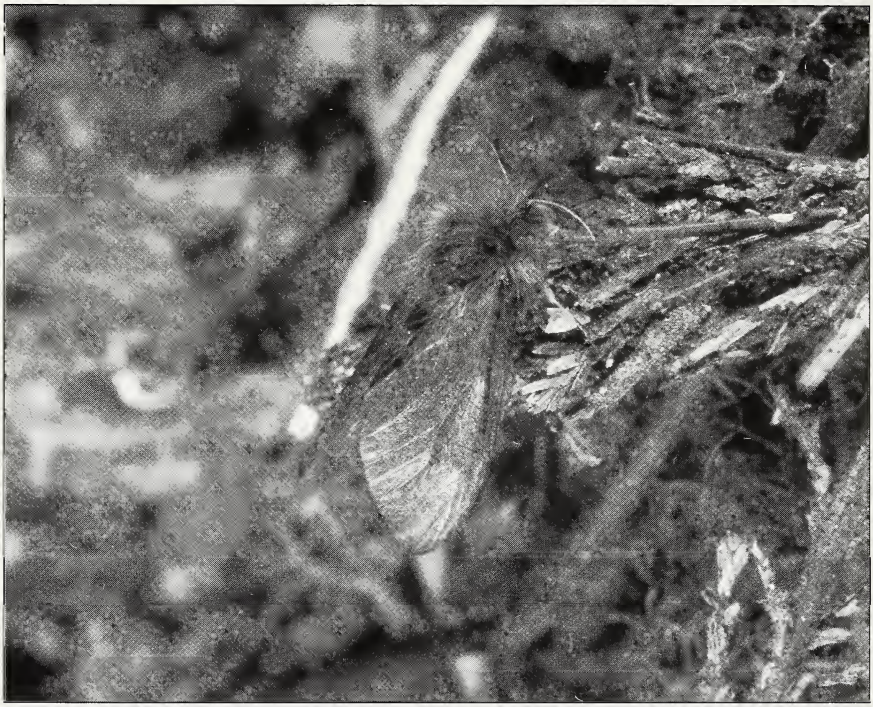

Figure 4. Adult male. *Acanthopsyche atra* (L.).

I kept female cases separately, once mated, and noted that the adult females within most, but not all of the containers, emerged from their cases and dropped to the floor of the container where they continued their peristaltic contractions until they died.

The time taken for females to wriggle free from their cases after mating ranged from a couple of hours to about three days. At no time did I observe any oviposition from these 'free-living' females and I concluded that the ova must have remained within the abdomens, given their size. I am puzzled, therefore, by the statement in Hättenschwiler (*loc. cit.*) that ova are laid in the pupal skin. This cannot always be the situation as the observations with the robin have demonstrated.

I examined the few cases which still contained females and noted that they were exactly as the one I had originally found on Upton Heath two years earlier. I could see their posterior ends. It occurred to me that the reason that these females remained within their cases was that they were genuinely trapped, and probably deliberately so. I only ever observed the peristalsis of 'free-living' females in one direction (head to tail) and if this were true of those facing the 'wrong way' in their cases, then I do not believe they could get out. Given their relatively weak movement I did not think it plausible that a female could turn round in her case having emerged, though I suppose this a possibility. I also consider that the female is trapped there by design;

her progeny get the chance to develop in the vicinity of where their mother lived to adulthood, and more immediately, the young larvae can obtain their first meal and case construction materials within the protective jacket of her old case.

My last curiosity with this species left me wanting to repeat the whole rearing exercise. I kept all 'free-living' females and encased females separately, in the hope that I could observe emergence of the young larvae. I had no success at all with the 'free-living' females, but plenty of larvae appeared from those trapped in their cases. I did not observe whether 'trapped' females laid eggs in the pupal skin, or whether they remained within the abdomen. It could not be that ova within 'free-living' females must pass through the gut of an animal to have any chance of viability, could it? Perhaps it is more likely that I had not got the environmental conditions right, since these females either desiccated or went mouldy in the end, but the possibility remains.

Although the evidence that birds are involved in dispersal of this moth is intriguing, I do wonder how frequent predation would be by avian predators in the wild, and whether other predators may be involved. Lowland heathlands in Dorset support a range of insectivorous birds. Perhaps the most frequent of those likely to forage through the dense vegetation would be Wren *Troglodytes troglodytes* and Dunnock *Prunella modularis*, but others could include Stonechat *Saxicola torquata* and Dartford Warbler *Sylvia undata*. However, densities of breeding birds on lowland heathland are generally low, perhaps a few pairs per hectare. Also, once the female has wriggled free of her case she is most likely to fall into a deep jumble of leaf litter and woody material that characterises the understorey of mature heaths in Dorset. Thus I think the chances of *A. atra* females being eaten would be low, although I accept the dispersal strategy would still work even if predation were an infrequent event. In this county it may be more likely that females are taken by other predators, such as reptiles or possibly small mammals. The density of reptiles on the Dorset heaths is very high, in the hundreds or even thousands per hectare, particularly of Slow-worm *Anguila fragilis* and Common Lizard *Lacerta vivipara*. As these animals would be regularly foraging amongst the heather plants, and the size of prey would be ideal for them, I would suggest they could be predating the females more frequently than are birds. As to whether ova can survive passage through the reptilian gut, I hope to be able to answer this question in due course.

I thus believe there are two dispersal strategies in *A. atra*. Which one is taken up is likely to depend on which way round the 'female' larva pupated in the case (I assume the larva, which has thoracic legs, is capable of turning around within the case). Once hatched, the female either wriggles free of her case and tries to get eaten to aid dispersal of her progeny, or she stays put (she has no option but to do so) and her progeny have a chance to develop in the area in which she managed to survive.

As I write, young cases of the next generation have more or less disappeared for the winter. It will be spring 2007 before I get another chance to observe the extraordinary behaviours of this moth and to experiment with a few predators!

Comments on conservation

It is clear that *A. atra* is a moth of retiring habit, spending most of its life out of view deep amongst heather plants. The larva is principally a detritivore, though some living plant material is also eaten, so there is almost no evidence of feeding pattern. Only when the larva fixes to pupate does the case become apparent, but usually it does so relatively low to the ground where it can easily be overlooked. Also the adult is rarely seen. Given the widespread but scattered distribution of the moth from the lowland heathlands of southern England to the moorlands of Wales and Scotland, it seems that *A. atra* is far more likely to be an overlooked species than it is to be a genuinely rare moth.

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A SURVEY AND ECOLOGICAL STUDY OF THE SQUARE-SPOTTED CLAY *XESTIA RHOMBOIDEA* (ESPER.) IN CAMBRIDGESHIRE AND ESSEX WITH ADDITIONAL RESULTS FROM SCOTLAND AND WALES

[1] R.G. Field and [2] P. Waring

[1] *166 Sherwood Avenue, Northampton, NN2 8TE, 01604-844972 (E-mail: rfield8633@aol.com).*

[2] *CERA, Writtle College, Lordship Road, Writtle, Chemsford, CM1 3RR.*

Abstract

The behaviour of the Square-spotted clay *Xestia rhomboidea,* a UK Biodiversity Action Plan moth species, was investigated in Cambridgeshire and Essex during a three year period. Larvae were found on 30 different occasions at 16 sites; larvae wre also discovered at two sites in Scotland. The main larval foodplants were Common nettle *Urtica dioica*, Dog's mercury *Mercurialis perennis*, Oxlip *Primula elatior* and Primrose *Primula vulgare*. The larvae were observed in the wild between the 10 January and the 12 April and could be found from dusk onwards feeding at the top of the larval foodplants. Adults were observed nectaring around dusk and later caught in light traps around dawn, mainly in August. The woodlands between Cambridge and St Neots seem to be a stronghold of this species which was found on ride and woodland edges of not only ancient woodlands, but also in secondary woodland, recent plantations and shelterbelts.

Introduction

The aim of this study was to investigate the autecology of the Square-spotted Clay *Xestia rhomboidea,* a UK Biodiversity Action Plan species. The study was based mainly in Cambridgeshire and Essex, but three separate visits to Scotland and one to Wales are included in the study period March 2002 and August 2005. Little was known about either the distribution or ecology of the species in Cambridgeshire and Essex before the project started. The Species Action Plan (SAP) (UK Biodiversity Group, 1999) suggested the larvae used Chickweed *Stellaria media*, Dock *Rumex* spp., Sallows *Salix caprea*, Primrose *Primula vulgaris*, Birch *Betula* spp., Bramble *Rubus fruticosus* agg. and Ribwort plantain *Plantaga lanceolata* and the adults had been recorded nectaring on the flowers of Burdock *Artium* spp., Rosebay willowherb *Epilobium angustifolium,* Woodsage *Teucrium scorodonia* and Ragwort *Senecio* spp. in August.

A short extract from Ebert (1998) on behaviour in Europe suggested several larval food plants such as *P. vulgaris,* Oxlip *Primula elatior,* Common nettle *Urtica dioica*, and Blackthorn *Prunus spinosa*. The habitats the species occupies in continental Europe were given as bushy embankments, track margins, railway embankments, hedgerows, gardens and parklands. Ebert (1998) also listed species which the moth was seen to nectar on in mainland Europe and these included: Majoram *Origanum vulgare,* Ragwort *Senecio fuchsia,* Buddleia *Buddleja davidii,* Soft rush *Junctus effusus* and thistles (no Latin given), plus artificial bait such as sugaring mixture.

Waring (2002) reported that 17 *X. rhomboidea* had been caught in a light trap set on National Moth Night in 2001 at Overhall Grove, Cambridgeshire. Several adults had also been light trapped in the Fulbourn area of Cambridge, at RSPB Fowlmere and in the north of Essex over the last few years (Field, 2003). These records were the starting point for this research.

Methods

The historical records of adult observations in Cambridgeshire were reviewed and likely sites identified. These sites were then visited during the periods October to April for larvae and July and August for adults. The larval searches commenced around dark and in 2002 the areas searched were adjacent to where adults had been previously light-trapped. At that stage all the ground vegetation was searched as our only guide was the larval food plants suggested by Skinner (1998) and identified in the UK BAP (UK Biodiversity Group, 1999). All the low growing vegetation was therefore checked using torch light. Larvae identified were recorded, and surrounding vegetation noted. In 2003, 2004 and 2005, further similar searches were carried out but mainly confined to woodland and ride edges and areas of sparse scrub.

The behavioural study of captive larvae commenced in early 2003 and continued in 2004 when 200 mm diameter flower pots were planted with *U. dioica* and *P. vulgare*. Each pot had one large *U. dioica* plant and four *P. vulgare* plants planted in it. The pots were then placed in nets and put outside in a sheltered spot. One *X. rhomboidea* larva was placed in each of the pots. The behaviour of each larva was observed between February and April (2004), and March and June (2003). Observations began on some nights two hours before dusk and on others continued until dawn. Temperature and weather conditions were also recorded on each occasion.

Light trapping for adults started in 2002 and continued in 2003. Some of these sessions involved all night trapping with multiple traps, while others continued only until about midnight with single traps. In 2004 and 2005 no specific light trapping took place but records were collected from moth trapping events in Cambridgeshire, Essex and Scotland.

Searches for adults nectaring also took place about one hour before and one hour after dusk. This involved searching vegetation in flower on the edge of woodlands or in woodland rides. Adults were recorded along with time and weather conditions. While searching for adults nectaring, time was also taken to try to find females egg-laying. This involved trying to find females flying and following them to egg-laying sites. This was only carried out for the hours either side of dusk due to the difficulty of finding the moths in flight in full darkness.

Searches for eggs were carried out in August when several surveyors searched all branches, leaves and undergrowth within reach at sites known to hold strong populations. These took place in daylight and covered several sites in Cambridgeshire in 2003 and 2004 and Scotland in 2004.

Results

Larval searches

Larvae were searched for at 28 sites in England, 10 sites in Scotland and four sites in Wales (Field, 2005a). Larvae were recorded from 16 sites in England, of which two are in Essex (Waring & Field, 2004) and the remainder are in Cambridgeshire (Field, 2005b), and two sites in Scotland (Field & Gardiner, 2004) (Table 1). Larvae were observed in the wild from 10 January to 12 April and they were found feeding on

nine different species. These were *U. dioica* (62% of larvae observed), Dog's mercury *Mercurialis perennis* (25%), *P. elatior* (4.4%), Cow parsley *Anthriscus sylvestris* (4.4%), *P. vulgare,* Lords and ladies *Arum maculatum*, Cleavers *Galium aparine*, Creeping buttercup *Ranunculus repens* and *R. fruticosus.* In 21 timed sessions over 128 hours a larva was found every 2.06 (0.22-9.75) person hours.

The majority of the larvae were observed on the drip line at the edge of either woodland rides or on the woodland edge. Some larvae were found within very open scrubby woodland and in Scotland the larvae were several metres from the drip line outside the woodland edge (Field & Gardiner, 2004). There is often Elm *Ulmus* spp. present near to where the larvae were found but in Scotland and at least one other site there was no *Ulmus* spp. present. The larvae started to climb the food plants about two hours before dark and remain part on the plant and part on the soil in a reared up position until dark. At dusk the larvae rapidly moved to the top of the larval food plants and can be readily found by searching with torchlight. At no time during the period January to April were the larvae found feeding on the leaves of woody vegetation as suggested in the SAP. In fact at Hilly Wood the larvae were found on the field side of a wet ditch surrounding the wood, with no woody vegetation on that side of the ditch (Waring & Field, 2002).

The larvae seem to be active even when the temperature was as low as 2°C, but were never found in conditions when the temperature was 0°C or less, which it was during four hours of the observations.

Captive stock

While in captivity larvae were seen to feed on *P. vulgaris* and *Prunus domestica insititi*, but showed no interest in *Rubus* spp. leaves. They commenced feeding as soon as it became dark and continued for a couple of hours. By day they hid under plant debris or in the top layer of soil. All four larvae had completed growth by the end of March. The larval skins were shed and pupae formed during the first week of May (Waring and Field, 2002).

The behaviour of the captive larvae was observed for 70 hours in the period 18 March to 27 April 2003. In this period the larvae were observed to appear about two hours before dark and lie with the front part of the body on the base of a larval food plant stem and the rest of the body on the soil. They remained in this reared up position until dusk and then climbed quickly to the top of the plant and started to feed (Field, 2005a). Feeding was observed on nearly 66% of observations, with feeding on *P. vulgare* leaves being the more popular, followed by feeding on *U. dioica* and then feeding on *P. vulgare* flowers. As the *U. dioica* became older with less new growth, they were avoided and more feeding took place on *P. vulgare.* Feeding continued for most of the night but by 5.00 am (prior to dawn and still dark) the larvae had disappeared.

In captivity, the larvae were seen feeding between 2°C and 17°C. In the wild, the lowest temperature larvae were recorded feeding was 2°C. The only night the weather seemed to have an affect on feeding was on the 1 April 2003, when it was windy and cold. One larva was reared up on a *P. vulgare* stem before dark, but did not climb up to feed.

Neither of the two captive larvae were seen during the period 24 to 29 March 2003, but on 30 March one larva reappeared in a final instar and returned to feeding. The other was not seen feeding until 4 April. Both larvae then continued to feed every night until 18 April, but by 26 April neither was feeding. On 27 April, one larva had turned almost completely white, with just the darker wedge shaped markings left. The larva was hiding under the vegetation and was placed in a box of soil with *P. vulgare* leaves on the top. The larva fed for the last time on 28 April and then descended into the soil, pupating on 17 June. A further study was carried out in 2004 using four larvae and four netted pots. Very similar behaviour was observed with feeding taking place most nights

The female lays its eggs singly and glues them to leaves and stems. In captivity the eggs were laid over both the upper side and undersides of *U. dioica* leaves. In 2003 one female laid eggs on the underside of *U. dioica* leaves in preference to *U. minor* leaves. The eggs are white when laid but became dark in colour and hatch after about 9-10 days. In an experiment conducted with young larvae, three groups were fed, one with *Ulmus* spp. leaves, one with *U. dioica* leaves and a third with a mixture of the two. The larvae reached 5-6mm in 10 days and after a month were 10-11mm in length. The growth was similar from all three groups, but the group given a choice preferred *U. dioica* leaves but not exclusively. These larvae were still feeding at the end of September and had reached a similar size as larvae found in January and February. It is therefore suspected that they must become inactive during the autumn and early winter and resume feeding once the temperature rises again (Field, 2005a).

Larvae collected from the wild were also found to accept the leaves of other woody perennials in addition to elms in captivity, including Bullace *Prunus domestica* (Waring, 2002), but were never seen feeding on the foliage or any other part of any woody perennial during the many hours of spring searches.

Adults

Adults were observed at 24 sites across Cambridgeshire and Essex (Figure 1). Fourteen of these sites were where larvae had been found and adults were also found at Hail Lane Abbotsley, Abbotsley, Eversden Wood, Barton, Wicken Fen, Eltisley, The Gorse (TL 247614), Duloe Brook, Dry Drayton and Chippenham Fen. Other sites with recent records for adults such as The Belts, Wimpole Hall (2000); Drumguish (2000), Glen Nant (2005 J. Halliday pers. com.) (Field & Gardiner, 2004); Lake Vyrnwy (1987), Coedydd Aber (1996)(Field, 2005b) and Taynish (2004 & 2005) (Field, 2005c) were also searched for larvae without any being located.

Adults fly from late July and a few are still on the wing late in August in Cambridgeshire and Essex. In Scotland the limited data suggests that they may be on the wing about two weeks earlier than in England. Both male and female nectar and come to light, but far more males were light trapped than females. Of the 20 adults seen nectaring, ten (50%) were on Teasle *Dipsacus fullonum*, eight (40%) were on *A. minus*, one (5%) on Ragwort *Senecio jacobaea* and one (5%) on Black knapweed *Centaurea nigra*. Nectaring mainly occurs half an hour before dusk to an hour after dusk. Likewise adults seem to come to light within an hour of dusk and then again

much later in the night (mainly near to dawn). Egg-laying has never been seen in the wild and eggs have only been found once (on *Ulmus* spp. leaves). Five eggs which were an exact match to eggs obtained at the time from wild females were found on 18 August 2002 laid singly on the outer edge of the underside of leaves of sapling *Ulmus* spp. within a shelter-belt of trees and undergrowth. The eggs were at approximately head height (Edwards & Joy, 2003). One of these eggs was collected and supplied to PW for confirmation of identification. It was certainly a close match, but the egg never hatched for confirmation as larva and adult. Several subsequent searches of this site and elsewhere, failed to produce results.

Table 1. Larval records 2002-2005

Site	Number	Date
Overhall Grove	2 larvae	22/03/02
Hilly Wood	3 larvae	25/03/02
Overhall Grove	2 larvae	29/03/02
Overhall Grove	2 larvae	04/04/02
Overhall Grove	4 larvae	11/04/02
Whitehills Plantation	9 larvae	12/3/03
Fulbourn Fen NR	6 larvae	17/3/03
RSPB Fowlmere	5 larvae	24/3/03
RSPB Grange Farm	5 larvae	27/3/03
Overhall Grove	6 larvae	27/3/03
Oxey Wood	2 larvae	28/3/03
New Farm	30 larvae	31/3/03
Gamlingay Wood	7 larvae	2/4/03
Hilly Wood	1 larva	4/4/03
RSPB Fowlmere	6 larvae	12/4/03
Lodge Farm Fulbourn	1 larva	3/2/04
Fulbourn Fen NR	10 larvae	11/2/04
Little Paxton Pits	1 larva	2/3/04
Freewood	1 larva	15/3/04
Melwood	6 larvae	16/3/04
New Farm	3 larvae	17/3/04
Langley Upper Green	2 larvae	17/3/04
Carr Brae	2 larvae	22/3/04
Arduaine	1 larva	26/3/04
Oxey Wood	1 larva	26/3/04
Bedford Purlieus	1 larva	7/4/04
Fulbourn Fen NR	2 larvae	10/1/05
Fulbourn Fen NR	2 larvae	17/1/05
Elton	2 larvae	31/3/05
Elton	2 larvae	6/4/05

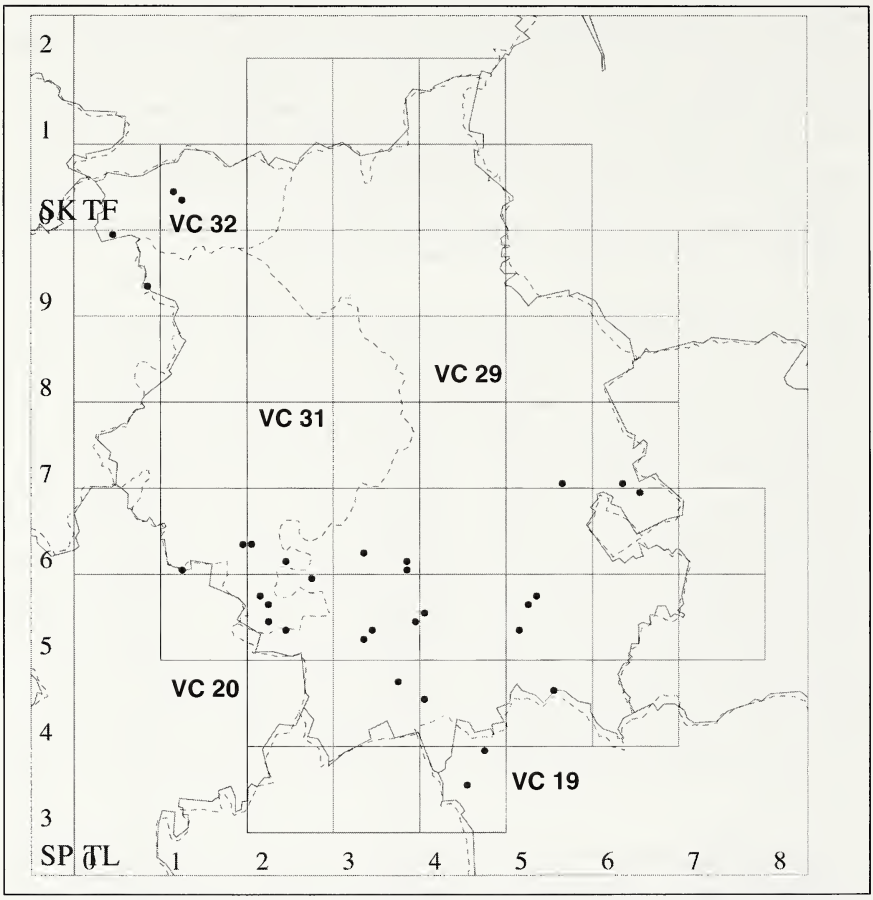

Figure 1. Distribution during the research period of *Xestia rhomboidea* in Cambridgeshire and Essex.

Discussion

During the three years of research much progress in understanding the distribution and ecology of this species has been made. The larvae have been identified in the wild at fourteen sites in Cambridgeshire and Essex, two sites in Scotland and independently at one site in Norfolk (Haggett, 2002). Research has found it feeding on mainly *U. dioica, M. perennis* and *P. elatior.* The NBAP suggests *S. media*, *Rumex* spp., and *P. lanceolata* as possible larval food plants but no larvae have been observed on any of these plants even though they were present at many of the sites. Also suggested were more woody species such as *Betula* spp., *S. caprea*, *R. fructicosus* agg. and these may well be used along with *Ulmus* spp. and other trees species for egg-laying habitats and food for early larval stages. However from at least January larvae feed on the range of ground vegetation identified in this study.

While Haggett (2002) found 'one feeding at the tip of freshly sprouted Yorkshire fog *Holcus lanatus'* (1 Feb.) and feeding on *U. dioica* (17 March), no larvae have been observed feeding or even climbing on any grass during this research. Larvae have been observed climbing up the dead stems of the previous years *U. dioica* to feed on new growth of *U. dioica.* Larvae were observed feeding from early January until the 12 April in various locations both on ride and woodland edges and within open woodland.

The adult was found in Cambridgeshire to be numerous at several sites where it had not been recently recorded. There were several records of nectaring on *A. minus* and even though various accounts claim to have observed it in the past, all the *A. minus* plants seemed to have gone over by early August and *D. fullonum* was the most common plant on which the adults were seen nectaring. It could be that early nectaring is on *A. minus*, while later they move on to *D. fullonum.*

Haggett (2002) recorded adults in Thetford forest on the 7 (seven) and 8 (11) of July 2001. This is very early and may be due to the light, well-drained soil conditions in that area. Most records in our study and the national database indicate a late July start for the flight period in England. The peak period seems to be between the 6 and 21 August, with adults recorded up to the end of the month.

The Biodiversity Action Plan suggests that the cessation of coppicing and neglect of woodland management may be factors in the decline of this moth. It is classed as Nationally Scarce (recorded from less than one hundred 10km squares in Great Britain between 1980 and 1999). The species appears to have been lost from the west of England including Hampshire, last seen in 1968 (Goater, 2001) and Dorset, and there are no recent records from Devon and Cornwall, where there is now doubt about some of the old records (McCormick, 2001 and Smith, 1997; see also Parsons, 2004). In Cambridgeshire, it is not exclusively found in ancient woodland. In fact several of the sites are modern plantations, some obviously planted on sites which have not been woodland for many years. These sites are often small or are narrow shelterbelts with an open woodland canopy. Where the moth was recorded in ancient woodland, such as Overhall Grove, the surrounding secondary woodland and plantations were also found to hold populations. The moth thus must have powers of dispersal up to at least one kilometre as this record and records from Fulbourn, and Dry Drayton also suggest.

Three sites where the moth has been recorded had species rich hedgerows nearby. The hedge bottoms had suitable larval food plants but no larvae were found even though at RSPB Grange Farm other small plantations in the area were found to hold the larvae. It is likely that the hedgerows are too open a habitat for the moths.

In Scotland the larvae was found in slightly more open areas of woodland on south or west facing steep slopes. As many small areas of broadleaved woodland match this description and with a wide range of larval food plants used, many of which are to be found in these areas, there could be large amounts of suitable habitat available. Due to the remoteness of many of these sites, and the lack of recorders in many of these areas, only a large scale research project can assess whether the moth is more widespread than is presently thought. An adult was light trapped in August 2004 at Taynish NNR (Field, 2005c) but a further survey at Taynish in March 2005

failed to find larvae for the second year running. However, on the 6 August 2005 two adults were observed nectaring on *A. minus* and *S. jacobaea* and one light trapped.

In central and north Wales there has not been a verified recorded of the moth for at least nine years with the previous record being nine years older than that (Parsons, 2004), so there must be some doubt as to whether this region still holds populations of the moth.

Conclusions

The moth has two strongholds in Cambridgeshire. One is in the south between Cambridge and St Neots, and this spreads over the borders into the surrounding counties of Essex, Hertfordshire and Suffolk. Most woods in this area have been found to have populations of the moth and many which have not been searched for larvae or light trapped for adults could also hold such populations. There are few woodlands between Cambridge and Huntingdon and no more records except from the north western corner of Cambridgeshire and north Northamptonshire. Here to the west of Peterborough are another set of woodlands with recent records of both adults and larvae. It is quite possible that many of the other woodlands in the area and in neighbouring areas of Northamptonshire and Lincolnshire may also hold populations.

No suggestion can be put forward as to whether the populations are in decline in these areas as prior to the commencement of this study only two or three recent and fairly casual records were available. There was no routine monitoring of these sites and without the present research little current information would be available. However several of these sites could be under threat from future housing and road developments as the Government sees Cambridgeshire and the M11/A1 corridor as prime development areas.

In a separate study, larvae of the moth were found at two sites (near Kyle and Arduaine) in the west of Scotland in 2004, adults were light trapped in 2004 at two sites (near Kyle and Taynish) and in 2005 at two sites (Taynish and Glen Nant), thus removing fears of it's survival in Scotland. There is a vast amount of possible habitat which has never been investigated on the west coast and inland along the Great Glen and near Kinguisse. This means that the moth could be far more widespread than previously thought or it could just be found in two or three areas now. In Wales the situation is far more unclear with few verified records over the last 20 years and no larvae found during a recent survey (Field, 2005b).

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Foodplants and search strategy for the Bordered Gothic *Heliophobus reticulata* (Goeze)

The larval foodplants of the endangered Bordered Gothic moth *Heliophobus reticulata* appear to be unknown in the wild in the British Isles, according to the standard textbooks. In the late nineteenth century, Buckler tried rearing the larvae on Campions *Silene* spp., on the basis that in continental Europe the larva was reported to feed on *Silene, Saponaria* and *Dianthus,* preferring the seed capsules, but he was unsuccessful (see Barrett, *Lepidoptera of the British Islands* **4**: 153). Newman & Leeds (1913. *Textbook of British butterflies and moths*) list Bladder Campion *Silene vulgaris* and Catchfly *Silene* spp. as the foodplants, but note that the larvae are difficult to rear. In the 1950s, the issue was explored again by Johnson (1953. *Ent. Rec.* **65**: 326-327) and Lees (1954. *Ent. Rec.* **66**: 4-5). Johnson tried rearing from eggs laid by a wild-caught female and was clearly uncertain of the foodplants. He offered the larvae "a salad of plants including several species of *Polygonum, Rumex, Trifolium, Lotus, Lychnis* and *Silene*", finding that "most species of *Polygonum* were nibbled, and the flowers of *Lotus corniculatus* were eaten, the rest were ignored." All the larvae died quickly except one. The survivor reached a length of 2cm eating flowers and sometimes leaves of Knotgrass *Polygonum aviculare* but became flaccid and died about six weeks after hatching. As editor of the *Ent. Rec.* at the time, Cockayne added a footnote asking if any readers had reared the species and he had also contacted Austin Richardson who had found larvae in Ireland. He included Richardson's reply in his note, the details of which are that Richardson had found two unfamiliar fully-grown larvae in the soil under Sea Campion *S. maritima* near Waterville, Co. Kerry, in early September 1936, while digging for larvae of Barrett's Marbled Coronet *Hadena andalusica barrettii.* The two larvae pupated almost immediately and the following year two adults of the rosy local form emerged. Lees provided his account in reply to Cockayne's appeal, reporting in some detail how in 1930-1931 he managed to rear ten adults from the egg stage, principally on Knotgrass, but some Bladder Campion had been offered to the larvae at the start of their development. The female which laid the eggs had been captured in mid June 1931 at Little Aston, south Staffordshire and the progeny emerged between 25 June and 7 July 1931.

One purpose of the present note is to enter into the entomological literature an observation recently made by Mick Beeson, who has helped me search for the Bordered Gothic around Peterborough (*Ent. Rec.* **116**: 131-133) and also helped me to rear larvae from Italy. Mick has found relevant information in Steers, J. A., 1960. *Scolt Head Island* Heffer, Cambridge, originally published in 1934. In Chapter 16, which was written by E.A. Ellis, but with input from F. Sowels and P. Brodie, we find "Other interesting moths.... are the Sand Dart feeding on Hound's-tongue and Prickly Saltwort, the Dog's Tooth on docks and Chenopodiaceae, the Bordered Gothic on Sea Campion and the White Colon on Orache." This suggests wild larvae had been found on Scolt Head Island and reared by one of the above gentlemen.

Soapwort *Saponaria officinalis* is another species with which the Bordered Gothic has been associated, indeed it was once named after it, *H. saponariae* Borkhausen, 1792, presumably after a larva had been found and reared on the plant. Julian Clarke (pers. comm.) has said that a captive female he once had would only lay eggs on this plant, of those species he offered. Soapwort has a scattered British distribution somewhat similar to the past records of the Bordered Gothic (Perring and Walters, 1990. *BSBI Atlas of the British Flora*), but it is a localised and infrequent plant, usually occurring in a few discreet stands in any district and is not easy to overlook. In many places where the adult moth has been reported, there is no Soapwort, nor any record that it was formerly present, so the moth cannot be exclusively dependent on this plant. For example, Barnhamcross Common, near Thetford, on the Norfolk/Suffolk boundary, is one of the last places in Britain to have produced annual records of the moth. Adults were being recorded there at light-traps up to about 1998 (S. Dudley, *Atropos* **20**: 59) yet when a BENHS field meeting was held there on 1 July 2004 to run light-traps in the hope of locating the moth, we found no Soapwort, but a fair amount of Bladder Campion *Silene vulgaris*, by which we placed our traps without success. This area has also been well-worked for moths on dates appropriate for the Bordered Gothic in the other years since 2000 by Tony Prichard and others (pers. comm.) without success.

Soapwort, like *Silene* and *Dianthus*, is a member of the Caryophyllaceae. In 2004, I was fortunate to attend the first Field Congress of the Societas Europaea Lepidopterologica (SEL) at the town of Burgeis, in the Sesvenna Valley, in the Italian Tyrol, 6-11 July 2004. On each night of the Congress I and others captured numbers of the Bordered Gothic at light in Burgeis and the environs, flying alongside *H. kitti,* some arriving just after dusk (see *Bull. AES* **64**: 104-117). I came back to the UK with eggs and egg-laying females, from which larvae were subsequently reared to final instar (see *British Wildlife* **16**: 58-60). This SEL Field Congress was invaluable in demonstrating a habitat and climate regime in which the Bordered Gothic was widespread and numerous, in the apparent absence of Soapwort. What was noted during the field excursions was that other members of the Caryophyllaceae were frequent in some areas where we were trapping the moth, particularly Bladder Campion, Red Campion *S. dioica* and pinks *Dianthus* spp. Rearing the larvae showed that they were able to grow from egg to fully-fed final instar larvae on Soapwort but that they would accept White Campion *Silene latifolia*. In both cases the flowering parts and especially the developing seed-capsules were strongly preferred over the foliage. I noted that all the larval instars are green except the last, which is brown, and that as the larvae grow and reach this stage they leave the foodplant by day and hide in earth or amongst paper and other litter in their boxes, as was noted by Lees. Lazlo Ronkay (pers. comm.) confirmed at the SEL Congress that the early instars can be found by day on larval foodplants such as *Silene* and *Dianthus* in the wild in central Europe. Unfortunately, when my captive fully grown larvae were in the care of Mick Beeson, who provided them with a peat-based mixture in which to pupate, they began to become flaccid and die and rapidly the whole stock was lost, as had

happened to most of those reared by Lees. We thought that the peat mixture may have been chemically treated with pesticides, but in view of the difficulties experienced by the above authors in rearing the species, the losses may have been only coincidental with the provision of peat and were more probably caused by a virus or other pathogen.

In conclusion, the larva of the Bordered Gothic appears to have been found in the wild in the British Isles pupating under Sea Campion in Co. Kerry in early September 1936 and feeding on it on Scolt Head Island, Norfolk, at some time prior to 1960. Although Soapwort has sufficient potential to justify targeted searches for the larva, such as those made unsuccessfully by David Agassiz and Roger Kiddie in north Kent in 2002 (Agassiz, unpublished report to Butterfly Conservation, 2002) and I around Peterborough from 2001-2003, campions such as Bladder Campion are at least as likely to support any surviving populations of the moth. I have not researched the current status of the moth in southern Ireland but since the start of the new millennium there is nowhere in Great Britain where a population of the moth has been confirmed. The most promising option is the Gravesend area of north Kent where singletons were recorded at light on 27 May and 20 June 2001 in David Agassiz's garden, where they had also been trapped on 10 & 24 June 1995, 8 June 1996 and 22 July 1998, with no trapping in 1999-2000 because David was overseas. However, the above survey in 2002 was unable to locate a local breeding site or place where the adults could be trapped reliably, though this might still exist. My own observations in Italy in 2004 and those of others in Britain in the twentieth century, indicate that the adult Bordered Gothic comes well to light, from soon after dusk, when populations are strong. Should any more singletons be trapped anywhere from 2006 onwards, I would recommend a search for the nearest campions as well as Soapwort and several additional nights of light-trapping in this area as quickly as possible, followed by searches for the young larvae by day on the plants from mid June to early July and for the larger larvae by night in the following weeks until the end of August. For more on the national decline of the Bordered Gothic see *Atropos* **16**: 76-77.— PAUL WARING, Reader, Centre for Environment & Rural Affairs, Writtle College, Essex. Address for correspondence: 1366 Lincoln Road, Werrington, Peterborough PE4 6LS.

A COMMENTARY ON RECENT CHANGES TO BUTTERFLY DISTRIBUTIONS IN THE LONDON AREA

[1] Richard Fox and [2] Leslie Williams

[1] *Butterfly Conservation, Manor Yard, East Lulworth, Dorset BH20 5QP (Email: rfox@butterfly-conservation.org)*

[2] *London Natural History Society, 34 Christchurch Avenue, Kenton, Harrow, Middlesex HA3 8NJ*

Abstract

Changes in the distribution of butterfly species are presented from the London area for the period 1980-2000. Most species (65%) became more widespread, including some habitat specialist butterflies, but a few show substantial declines in distribution. Although incomplete data prevent a systematic assessment of the biasing effects of recording effort variation, other data are presented (e.g. from abundance monitoring, national distribution trends and site colonisations) to suggest that the distribution changes are genuine. Some of the possible causes of these patterns are discussed.

Introduction

Much recent attention has been focussed on changes in the distribution of species, particularly in response to climate change and habitat loss. Studies have identified patterns of range change amongst different taxa that are consistent with a climate explanation at global (e.g. Parmesan and Yohe 2003, Root *et al.* 2003), European (e.g. Parmesan *et al.* 1999) and British (e.g. Thomas and Lennon 1999, Warren *et al.* 2001, Hickling *et al.* 2005) scales. Such studies have sought evidence from distribution survey data for changes in species range occurring at latitudinal and altitudinal margins. Amongst British butterflies, northward extensions of range margins (although not range shifts) have been identified for 11 species (c. 25% of the southerly distributed species) and some evidence found for a shift to higher altitude amongst species with northern and/or montane distributions (Hill *et al.* 2002).

Habitat loss, fragmentation and degradation and their effects on the distribution of butterflies in Britain have been widely documented (e.g. Heath *et al.* 1984, Warren 1992, Fox 2001, Asher *et al.* 2001) and these should be considered in the context of spatially realistic metapopulation theory (Ehrlich and Hanski 2004). Some butterfly studies have looked at the important interaction between climate suitability and the availability, spatial distribution and quality of habitat in determining species responses (e.g. Hill *et al.* 1999, Thomas *et al.* 1999, Hill *et al.* 2001, Thomas *et al.* 2001, Warren *et al.* 2001), but these have focussed on large geographical areas and/or networks of conservation priority habitats such as unimproved calcareous grassland and lowland heath. Patterns of distribution change other than at latitudinal or altitudinal margins, and in urban landscapes have rarely been considered (but see Hardy and Dennis 1999, Dennis and Hardy 2001). Here we present an analysis of recent distribution change across the butterfly fauna of a major urban area; London, UK.

Methods

Study area

For the purposes of this study, the London area is defined as the recording area of the London Natural History Society (LNHS). This was originally a 20-mile radius from St Paul's Cathedral, but the current boundary is a stepped polygon, incorporating only complete 2km square divisions of the Ordnance Survey National Grid. The area consists of 856 2km squares, equivalent to 3424 km^2. From the centre outwards this encompasses central London, inner-city urban areas, substantial areas of suburbia and then a range of agricultural and semi-natural areas with significant human habitation and development.

Administratively the study area includes Greater London (made up of the 32 London Boroughs and the City of London) and adjacent parts of the counties of Hertfordshire, Essex, Kent, Surrey and Buckinghamshire. Together these fringing areas make up a substantial portion of the total study area, as well as containing a disproportionate amount of semi-natural habitats important to specialist butterflies (e.g. chalk grassland).

Greater London (at the core of the study area) includes less semi-natural habitat, although it contains a high proportion of greenspace. Gardens and parks make the greatest contribution to this greenspace, with approximately 31,600 ha of private gardens (c. 20% surface area) and approximately 21,000 ha of parks and amenity grassland (c. 13% surface area), but Greater London retains important areas of woodland and neutral grassland, as well as smaller areas of other semi-natural habitats (London Biodiversity Partnership www.lbp.org.uk).

Distribution data sources and date classes

The butterflies of the London area have been comprehensively surveyed in two recent periods. A Butterfly Atlas project organised by LNHS gave rise to distribution maps (at 2km × 2km grid square resolution) based on the 1980-1986 period (Plant 1987). Less than a decade later, the Butterflies for the New Millennium (BNM) project was launched to record butterfly distributions across the whole of Britain and Ireland. Data from the first 5-years of recording (1995-1999) for the BNM project were used to produce a new Britain and Ireland atlas (Asher *et al.* 2001). Although this atlas presented distributions at a 10km grid square scale, over 93% of the records in the extensive data set collated by the ongoing BNM project have a spatial resolution of 100m or 1km.

In common with most distribution recording schemes, both these data sets were collated from *ad hoc* observations. Such an approach is a traditional and practical way to collect distribution records, which then inform many biodiversity conservation programmes. However, collations of *ad hoc* records contain substantial temporal, spatial and taxonomic biases that are difficult to quantify and remove from distribution data sets (Dennis and Thomas 2000, Asher *et al.* 2001, Dennis *et al.* in press). It is essential to consider such bias when comparing species distribution in two date periods. Recording coverage is perhaps the most important element of such

bias. Complete recording coverage of 2km squares in the study area was achieved by the 1980-86 London survey. However, the presence of at least one species in every grid square does not prove that the survey recorded all butterfly species present in each square. Complete coverage was not achieved in the subsequent survey period, but recording may have been more thorough within the visited squares.

It was important to try to match the level of recording coverage as closely as possible between the two date classes in which butterfly distributions were to be compared. The baseline survey spanned a seven year period, but since, the intensity of biological recording across a wide variety of taxa has tended to increase in Britain during recent years, it was not necessarily fair to compare this baseline with an equivalent seven year date class from the BNM data set. Unfortunately, the raw data from 1980-86 was not available so detailed assessment of coverage (e.g. number of visits to each grid square) was impossible. In the absence of such information, a rough estimate of coverage was used to determine the most appropriate length of the second date class. The average number of occupied 2km squares for the six butterfly species expected to have a ubiquitous distribution in the study area was taken for the 1980-86 period and compared to the averages generated from BNM maps based on 1995-99, 1995-2000 and 1995-2001 date periods (i.e. 5, 6 and 7 year surveys). The 1995-2000 period achieved the closest match using this simple technique and so was used for the assessment.

Assessing species distribution

Butterfly distributions in the London area were calculated for all resident species as the number of occupied 2km squares. As previously noted, the data used to prepare the maps in the London atlas (Plant 1987) were not available so distributions were assessed by counting the dots (occupied 2km squares) on each species map. The BNM database was used to plot 2km distribution maps for the same species over the 1995-2000 period. The mapping programme calculated the number of occupied squares for each species automatically.

Proportional distribution change was calculated as the difference in the number of occupied 2km squares between the two date periods, divided by the number of occupied squares in 1980-86.

Results

Two thirds of resident species (26/40 species) increased in distribution in the London area between the 1980-86 and 1995-00 surveys (Table 1, Figure 1). In addition, four species (all very rare) remained stable over the period, meaning that a quarter of species (10/40) declined. Note that for some species the number of occupied squares was numerically low, particularly for some butterflies that only occur at the edge of the LNHS recording area, and measures of change for these could be affected by sampling errors.

Table 1. Distribution change of butterflies in the London area between 1980-86 and 1995-2000.

Species		1980-1986 occupied squares	1995-2000 occupied squares	Proportional distribution change %
Small Skipper	*Thymelicus sylvestris*	636	603	-5
Essex Skipper	*Thymelicus lineola*	570	567	-1
Silver-spotted Skipper	*Hesperia comma*	5	11	120
Large Skipper	*Ochlodes sylvanus*	614	540	-12
Dingy Skipper	*Erynnis tages*	33	44	33
Grizzled Skipper	*Pyrgus malvae*	35	53	51
Brimstone	*Gonepteryx rhamni*	402	520	29
Large White	*Pieris brassicae*	710	757	7
Small White	*Pieris rapae*	828	765	-8
Green-veined White	*Pieris napi*	719	759	6
Orange-tip	*Anthocharis cardamines*	500	656	31
Green Hairstreak	*Callophrys rubi*	33	59	79
Brown Hairstreak	*Thecla betulae*	4	4	0
Purple Hairstreak	*Neozephyrus quercus*	124	396	219
White-letter Hairstreak	*Satyrium w-album*	22	168	664
Small Copper	*Lycaena phlaeas*	355	445	25
Small Blue	*Cupido minimus*	17	21	24
Silver-studded Blue	*Plebeius argus*	2	2	0
Brown Argus	*Aricia agestis*	21	237	1029
Common Blue	*Polyommatus icarus*	587	573	-2
Chalkhill Blue	*Polyommatus coridon*	15	30	100
Adonis Blue	*Polyommatus bellargus*	2	3	50
Holly Blue	*Celastrina argiolus*	330	687	108
Duke of Burgundy	*Hamearis lucina*	4	1	-75
White Admiral	*Limenitis camilla*	49	85	73
Purple Emperor	*Apatura iris*	8	21	163
Small Tortoiseshell	*Aglais urticae*	856	749	-13
Peacock	*Inachis io*	678	759	12
Comma	*Polygonia c-album*	590	680	15
Pearl-bordered Fritillary	*Boloria euphrosyne*	2	2	0
Dark Green Fritillary	*Argynnis aglaja*	12	35	192
Silver-washed Fritillary	*Argynnis paphia*	13	53	308
Speckled Wood	*Pararge aegeria*	395	708	79
Wall	*Lasiommata megera*	354	63	-82
Marbled White	*Melanargia galathea*	20	121	505
Grayling	*Hipparchia semele*	3	3	0
Gatekeeper	*Pyronia tithonus*	521	701	35
Meadow Brown	*Maniola jurtina*	768	743	-3
Ringlet	*Aphantopus hyperantus*	121	265	119
Small Heath	*Coenonympha pamphilus*	442	295	-33

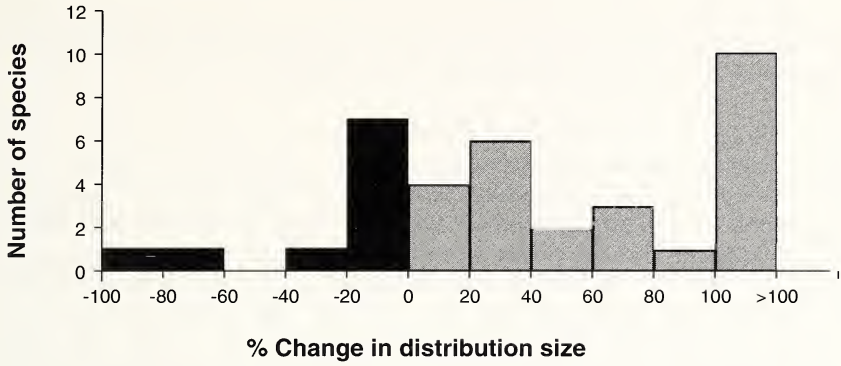

Figure 1. Proportional distribution changes of butterflies in the London area between 1980-86 and 1995-2000.

These results suggest that the distribution of 10 species more than doubled (in terms of the total number of 2km squares) in the London area, and a greater than threefold increase in occupied squares was recorded for five of these. The greatest increase recorded was for the Brown Argus *Aricia agestis*, which was observed in only 21 2km squares in the 1980-86 survey. By the 1995-00 survey, this species was found to occupy 237 2km squares, a proportional increase of 1029% (Figure 2). Other species exceeding a 200% increase in distribution are the White-letter Hairstreak *Satyrium w-album*, Marbled White *Melanargia galathea*, Silver-washed Fritillary *Argynnis paphia* and Purple Hairstreak *Neozephyrus quercus*.

Habitat specialist butterflies appear to have fared well. The calcareous grassland species Silver-spotted Skipper *Hesperia comma*, Chalkhill Blue *Polyommatus coridon* and Dark Green Fritillary *Argynnis aglaja* all increased by at least 100% and the results are also positive for some woodland specialists such as Silver-washed Fritillary, Purple Emperor *Apatura iris* and White Admiral *Limenitis camilla*.

Generalist butterflies such as the Holly Blue *Celastrina argiolus* and Speckled Wood *Pararge aegeria* (Figure 3) show the greatest increases in the number of occupied 2km squares (as opposed to proportional increase).

Most of the species that show a decrease in the number of recorded 2km squares between the two surveys are common, generalist species and their declines are negligible (e.g. c.10% decrease). Such species, the Common Blue *Polyommatus icarus*, Small White *Pieris rapae*, Small Tortoiseshell *Aglais urticae* and Meadow Brown *Maniola jurtina* are amongst the most widespread species in the London area and across Britain.

The results for three species do give greater cause for concern however. One rare, specialist species, the Duke of Burgundy *Hamearis lucina* appears to have been lost from three of the four 2km squares occupied during the 1980-86 survey on the south-western edge of the recording area, which forms part of the limited range of this species in Surrey (Collins 1995).

In addition, the recorded distributions of two once regionally widespread species decreased substantially; the Wall *Lasiommata megera* by 82% (Figure 4) and the Small Heath *Coenonympha pamphilus* by 33% (Figure 5).

Discussion

This study shows that more butterfly species (65%) extended their distribution in the London area than declined during the 1980s and 1990s. This is in contrast to comparable national scale assessments. Warren *et al.* (2001) found that three quarters of non-migratory butterflies had declined in distribution in Britain between the 1970s and 1995-99. The discrepancy is explained, at least in part, by the fact that some of the most rapidly declining species nationally were extinct in the London area prior to the 1980-86 survey (e.g. the Wood White *Leptidea sinapis*, Small Pearl-bordered Fritillary *Boloria selene*, High Brown Fritillary *Argynnis adippe* and Marsh Fritillary *Euphydryas aurinia*).

Sampling effort

Without access to and computerisation of the full set of 1980-86 survey butterfly records it is impossible to measure any effects caused by variation in sampling effort between the two survey periods and this has hindered the application of any analytical procedures to the data. Our approach is to present the recorded change in distribution for each species and provide other evidence (e.g. from transect data).

However, some general comments can be made with regard to sampling effort. First, the overall coverage in the first survey period was better than in 1995-2000. At least one species was recorded from every 2km square in 1980-86. Second, the duration of the later survey period was selected so as to provide a similar level of coverage for the most widespread species. Third, the fact that both substantial decreases and increases in distribution have been revealed in this study suggests that these are real biogeographic patterns and not the result of a sampling artefact. Finally, there are general similarities between species distribution changes and abundance changes in London, as well as with distribution changes across Britain.

Therefore, whilst we are confident that sampling effort has not been a major influence on our study overall, we cannot assess the potential biasing effects on individual species. Species that are less apparent (because of behaviour, size, colour, flight period, biotope use or population density) to recorders are likely to be recorded only after repeated visits to a square (Dennis *et al.* in press). The number of recording visits made to a grid square has been shown to significantly influence both the total number of recorded species and the probability of recording each individual species in butterfly surveys of Greater Manchester (Dennis *et al.* 1999, Dennis and Hardy 1999). We suspect that the canopy dwelling species Purple Hairstreak, White-letter Hairstreak and Purple Emperor are more likely to have been under-recorded in squares that have received a low number of recording visits.

Comparison with abundance data from butterfly transects

The distribution changes of London's butterflies reported here can be compared with abundance data collated from transect monitoring that takes place at sites across Greater London following the standard methodology used in the UK Butterfly Monitoring Scheme (Pollard and Yates 1993). Although the first transect in the Greater London area (at Hampstead Heath) has been running continuously since 1978, many London transects have been established only recently. By 2000, data could be drawn from 19 transects, but many of these had only short time series of data (e.g. 10 sites only joined the scheme during 1999!) (Williams 2000). However, collated indices of butterfly abundance in Greater London have been calculated for all generalist species since 1990 and several habitat specialist species have been added since 1997 (Williams 2002). It must be recognised that these collated indices only represent Greater London, not the whole study area. Furthermore, an assessment of the data gathered up to 2000 concluded that few species showed a significant trend in abundance, probably because the large fluctuations in population levels typical of butterflies act to obscure long-term trends in short time series data (Williams 2001). This problem will be alleviated as further years of transect data are added in the future. Nevertheless, the index values for London's butterflies do represent the core part of the study area where many of the most dramatic distribution changes have taken place and can be informative even without statistical tests of trend significance.

Some of the species that have the most rapidly expanding distributions in the London area are generally not well covered by local transect monitoring, either because they are canopy species not well suited to the sampling method (e.g. Purple Hairstreak and White-letter Hairstreak) or because they occur at too few monitored sites to derive a reliable population index (e.g. Dark Green Fritillary and Silver-washed Fritillary). However, other rapidly expanding species show clear increases in index values since monitoring began. Population index values for the Ringlet *Aphantopus hyperantus* (which showed a distribution increase of 119%) have been above the 1990 baseline level in every year since except one (1996). Speckled Wood (79% distribution increase) and Gatekeeper *Pyronia tithonus* (35% increase) both have index values above the baseline level in eight out of ten years.

Similarly, the rapid distribution declines of the Wall and Small Heath are corroborated by London transect indices. The Wall has become extinct on all transect routes within Greater London (last recorded in 1995) and the Small Heath's collated index has remained below the 1990 baseline index in every year. Its population level in 2000 was the second lowest in the series.

For a few species, the distribution and abundance data present opposite views. The Brown Argus is an example. It has undergone a massive distribution increase since the mid-1980s, but the London transect data suggest a decline between 1990 and 2000, albeit with large fluctuations from year to year. We might not expect the distribution and abundance data to corroborate one another for this species because much of the species distribution expansion has been in those parts of the study area

outside of the Greater London boundary (e.g. in Hertfordshire to the north and Essex to the east, and also in Surrey and Kent to the south). Nevertheless it has been shown that species national distribution change and abundance change are highly significantly correlated (Warren *et al.* 2001). Furthermore, the Brown Argus' regional abundance indices for South-east England derived from the Butterfly Monitoring Scheme (David Roy pers. comm.) show increasing population levels in both generations (although this is statistically significant for the second generation only) and the species' national distribution has also increased substantially since the 1970s (Asher *et al.* 2001).

Possible explanations for this discrepancy are that the distribution increase may have happened during the late 1980s and early 1990s, but the butterfly may have declined since then, or that specific factors (most likely related to habitat) are leading to population decline at some or all of the monitored sites (only seven transects recorded this species in Greater London in 2000) whilst the species continues to do well elsewhere. Based on an index value of 100 in 1990, the species' transect index for Greater London increased to 136 in 1991, had declined to 18 in 1993, was back at 100 in 1995, 11 in 1998; (and a low of seven in 2001 rising to 41 in 2004).

The typical habitat of the Brown Argus is calcareous grassland, though it also occurs on coastal grasslands, in woodland clearings, heathland, disused railway lines, road verges and on set-aside fields (Asher *et al.* 2001). The presence of all these habitats is limited in Greater London and many areas of non-calcareous rough grassland have been lost to scrub and woodland, or to built development. Comparison of regolith maps and of the distribution of the Brown Argus in London and the surrounding counties (e.g. see Burton 1983, Collins 1995, Sawford 1987, Murray and Wood 2001, and the comments in Asher *et al.* 2001) suggests that the presence of chalk habitats is a significant factor for the Brown Argus. The main increase in range and abundance has been in the countryside beyond Greater London, particularly in the vicinity of chalk grasslands. The species has increased its range on the chalk of the south of Greater London too, but has also colonised sites away from the chalk (e.g. Mitcham Common, Wimbledon Common and Richmond Park). Thus much of London particularly in the north-west is geologically unsuitable for the Brown Argus, whilst elsewhere in London the primary and secondary grassland habitats for this species are unavailable due to loss to built development or because of succession to woodland. The evidence suggests therefore that, due to a combination of geological and ecological factors, the Brown Argus behaves as a habitat specialist in Greater London but more typically as a wider countryside species in the areas surrounding Greater London.

Comparison with national distribution change

We can also interpret the distribution trends found in the London area with those found at the national level (Asher *et al.* 2001). In most cases species faring well in London have also done well at the national level since the 1970s, including the Orange-tip *Anthocharis cardamines*, Purple Hairstreak, Speckled Wood, Marbled

White, Gatekeeper and Ringlet. All of these generalist species are undergoing national range expansions. In addition, the London area increases in distribution of some habitat specialist butterflies such as the Silver-spotted Skipper, White Admiral and Silver-washed Fritillary are also reflected in national distribution data. National surveys of the Silver-spotted Skipper, a UK Biodiversity Action Plan Priority Species, were conducted in 1982 and 2000 (corresponding well with the London survey periods) and revealed a threefold increase in the number of occupied 2km squares and even larger increases in the number of populations and area of habitat occupied (Davies *et al.* 2005).

All three of the butterfly species with severely declining distributions in the London area (the Duke of Burgundy, Wall and Small Heath) have also decreased rapidly at the national level.

Whist many species show similar trends in London and nationally, this is not true for all species. In particular, national assessments point to strong declines for the Dingy Skipper *Erynnis tages*, Grizzled Skipper *Pyrgus malvae*, Pearl-bordered Fritillary *Boloria euphrosyne* and Dark Green Fritillary. By contrast, some of these species increased in the LNHS recording area between 1980-86 and 1995-2000. Although the possibility of the discovery of previously unknown populations in London during the second survey cannot be completely discounted, a real increase in population distribution would appear a more likely explanation.

The apparent increase in the distribution of the Purple Emperor, a woodland specialist, in the London area was almost entirely in the wider LNHS area beyond the Greater London boundary and was probably due to more intensive recording. Recent targeted surveys for this species in Hertfordshire have 'discovered' the species in many places, where it has probably survived unnoticed for decades (Goodyear and Middleton 2003).

Drivers of change: climate and habitat

Aside from the potential artefact of changing recording effort, what environmental factors could be driving the changing distribution patterns reported here? As discussed in the introduction, habitat change and climate change have been identified as important drivers of distribution change in butterflies and other taxa in Britain and elsewhere.

At the national scale, climate change is thought to be the most important driver of range expansion for generalist butterfly species (Asher *et al.* 2001, Warren *et al.* 2001, Hill *et al.* 2002). However, at first inspection, the climatic conditions of the London area would appear to be well within the tolerance range of these species already and, indeed, their expanding range margins have occurred at much higher latitudes. The expansion of the Orange-tip over the past three decades has occurred mainly in southern and central Scotland, and those for the Gatekeeper and Ringlet have occurred in the Midlands of England and in Yorkshire. Nevertheless, a close examination of national expansion patterns shows that some generalist species have been extending their distributions in a north-easterly direction within South-east

England (e.g. from Surrey towards Essex). Our study reveals that the distribution change for species such as Marbled White and Ringlet, which were quite localized species in the 1980-86 survey, has been concentrated in the southern and western parts of the London area.

Local infilling of sites within the existing range of species may possibly be assisted by climate amelioration allowing lower quality habitat to be colonised. Similarly, if climate change is influencing population size, then more individuals may be available to disperse and to establish new local populations.

An increasingly favourable climate has been linked with the expansions of specialists such as the White Admiral and Silver-spotted Skipper. Silver-spotted Skipper colonies can now occupy cooler calcareous grassland sites (e.g. those with taller vegetation or non-southerly aspects) than they could in the early 1980s (Thomas *et al.* 2001) and this has increased the total amount of potential habitat available to the species. However, in both cases habitat change is likely to be a significant factor as well. For example, for the Silver-spotted Skipper, grazing as part of conservation management as well as by wild herbivores (particularly rabbits) has been a factor in the spread of this butterfly (Davies *et al.* 2005).

There is a pattern shown in the distribution changes that some of the generalist species have colonised the more central, urban parts of the London area from the fringes. The Gatekeeper shows this pattern of change particularly well, with much of the distribution increase between the two surveys occurring in inner London Boroughs (e.g. Lewisham, Southwark, Kensington & Chelsea, Hammersmith & Fulham) and new locations being recorded at places such as Buckingham Palace garden, the Tower of London, Finsbury Park, New Cross Gate, Russia Dock, Holland Park, the Natural History Museum garden in Kensington, and Barnes Common (Figure 6). Transect data have also indicated a large increase in the abundance of the Gatekeeper in Greater London.

The Purple Hairstreak is another example. Although it is a canopy species and, therefore, one that can go unnoticed by recorders, there appears to have been an expansion across London and into the inner city area (e.g. in the Boroughs of Kensington and Chelsea, Lambeth, Lewisham, Southwark and Wandsworth). The species has recently been observed at localities such as Holland Park, Streatham Common, Wandsworth Common and Tooting Common. Of course, improved recording can never be ruled out and we would welcome any records from these sites that might indicate a longer history of occupancy by these species.

Unfortunately, there are no data on the changing extent (or quality) of habitats in this central urban area or across London as a whole (Dave Dawson pers. comm.). However, there are some trends in London that may have influenced the changing distributions of butterflies. Wood and Pullin (2002) suggested that four species of generalist butterfly in Birmingham were limited by availability of habitat and had sufficient dispersal ability to colonise suitable patches within the urban landscape. In London, there has been a substantial shift in the way that many public open spaces (and even transport corridors) are managed since the early 1980s. Many public open spaces now have at least one area that is left to 'go wild' during the summer, rather

than being mowed short throughout the growing season. These new areas of tall grassland have presented opportunities for colonization and increase for some grassland butterflies, particularly the Gatekeeper and Ringlet. Increasing awareness of nature conservation, together with wildlife gardening and the declaration of Local Nature Reserves, may have contributed, at least in part, to the recent successes of some of London's butterfly species.

Despite these improvements, over the same period there has been a significant loss of early-successional open habitats, both to urban development and to scrub and woodland. Butterflies such as the Wall and Small Heath are associated with areas of short, open grassland where there are patches of bare or stony ground. In our study area, brownfield sites, 'wasteland' and the margins of transport corridors are particularly important for such habitat conditions. The loss of London's wastelands has reduced the available habitat for these heat-loving butterflies and may be responsible, at least in part, for their distribution decline. No figures are available for this loss of habitat, but the London Biodiversity Partnership states: "*Whatever the true extent of London's urban wasteland resource in the mid-1980s, there is no doubt that there has been a substantial reduction in its extent within the last decade. London's former docklands contained a significant proportion of the capital's urban wastelands, but most of this area has been redeveloped to accommodate London's burgeoning service sector industries. Other large areas have been lost in more recent years to provide land for new housing.*" (London Biodiversity Partnership, www.lbp.org.uk).

Aside from destruction of early-successional habitats, more insidious processes (e.g. eutrophication) may also be exerting significant influence. Analysis of terrestrial plant communities has shown increases of species that can tolerate high soil nutrient levels and decreases for those that cannot (Haines-Young *et al.* 2000, Preston *et al.* 2002). Pollard *et al.* (1998) identified eutrophication as one of the likely causes of a great increase in cover of coarse grasses at Monks Wood in Cambridgeshire, which they linked to increased abundance of butterfly species that use these grasses as larval hostplants (e.g. Large Skipper *Ochlodes sylvanus*, Speckled Wood and Ringlet). The spread of coarse grasses and other tall plants at the expense of finer grasses and shorter vegetation could be linked to the decline of species such as the Small Heath and Wall. The longer growing season made possible by climate change may also be exacerbating nutrient enrichment and contributing the decrease in broken turf micro-habitats that are so important to these butterfly species.

Conclusions

Clear changes have taken place to the distribution of butterflies in the London area in recent decades. Many species have increased, colonising new sites and spreading into more urban parts of London. However, although we believe this to be a biogeographical pattern, rather than an artefact of increased recording effort, we don't yet understand the causes. Climate change is known to be affecting the distributions of butterflies, both generalists and habitat specialists, at the national

scale, and it seems likely that there will be some local effects in the London area too. Another factor is that many of London's parks, cemeteries, gardens and open spaces are being managed in an increasingly wildlife-friendly way. However, other habitats have been lost during the same period, particularly with redevelopment of brownfield or 'wasteland' habitats, which are important for butterflies and a wide range of other invertebrate species.

Acknowledgements

We wish to acknowledge the unsung heroes – all those recorders who devoted countless hours to recording and monitoring butterflies across the London area and beyond. We are very grateful to Colin Plant and the London Natural History Society for their work recording butterflies during the 1980s and to the local Branches of Butterfly Conservation, who have inspired, motivated and organised recording of the area since 1995 as part of the ongoing Butterflies for the New Millennium project. We would also like to thank Liz Goodyear, Dr Jane Hill, Gail Jeffcoate, Andy Middleton, Dr John Murray and David Roy for additional information and stimulating discussion. Dr Dave Dawson advised on statistics and programming for the calculation of regional indices and Simon Mercer helped develop a series of linked spreadsheets for transect data. Maps were drawn using the DMAP software created by Dr Alan Morton.

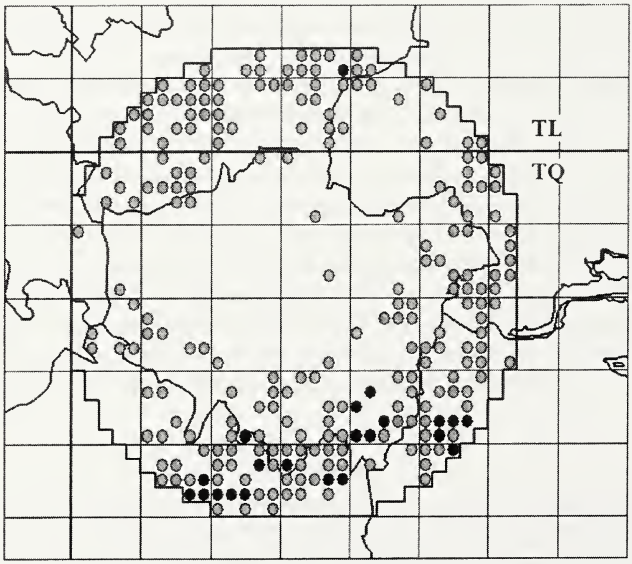

Figure 2. Distribution of the Brown Argus showing a 1029% increase in occupied 2km squares between survey periods. Black dots= occupied 1980-86, grey dots= occupied 1995-2000 only.

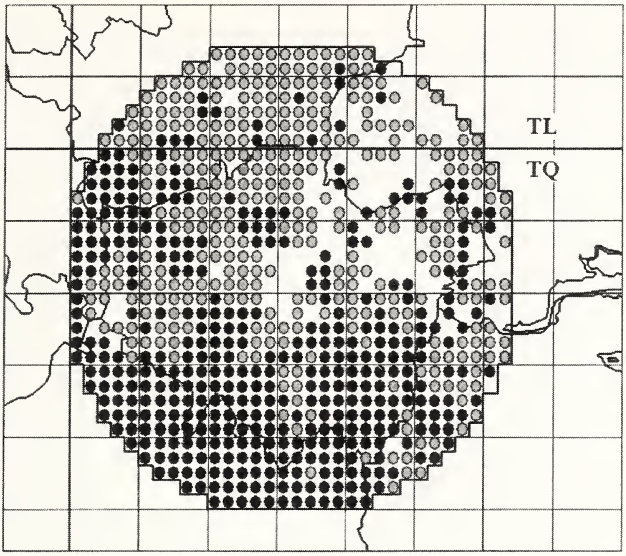

Figure 3. Distribution of the Speckled Wood showing a 79% increase in occupied 2km squares between survey periods. Black dots= occupied 1980-86, grey dots= occupied 1995-2000 only.

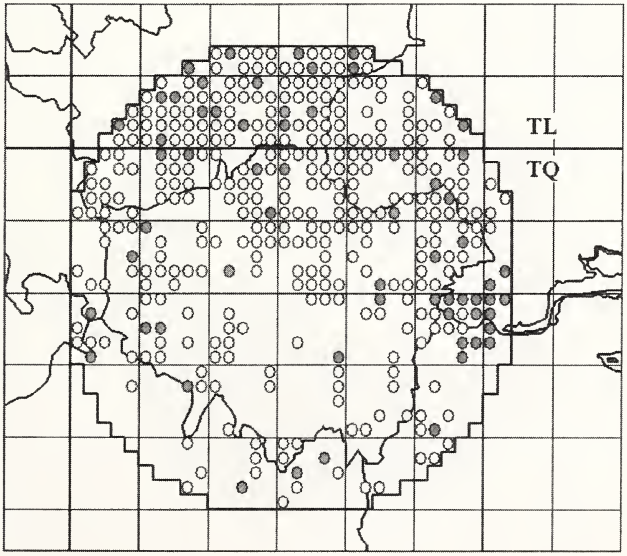

Figure 4. Distribution of the Wall showing an 82% loss of occupied 2km squares between survey periods. Open dots= last occupied 1980-86, grey dots= occupied 1995-2000.

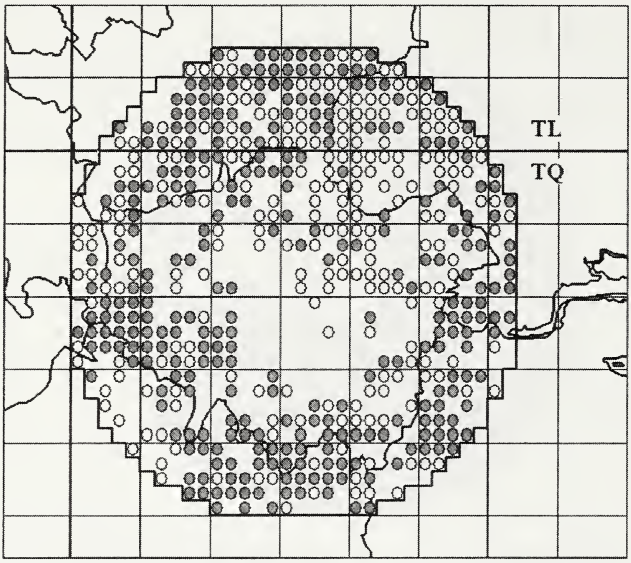

Figure 5. Distribution of the Small Heath showing a 33% loss of occupied 2km squares between survey periods. Open dots= last occupied 1980-86, grey dots= occupied 1995-2000.

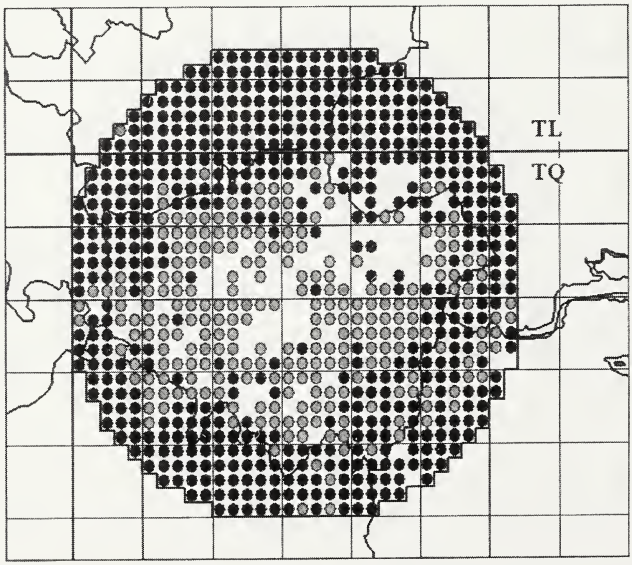

Figure 6. Distribution of the Gatekeeper showing a 35% increase in occupied 2km squares between survey periods. Black dots= occupied 1980-86, grey dots= occupied 1995-2000 only.

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Hazards of butterfly collecting. Butterflies and surgical contraception – Yemen, 1980

In 1980 and 1981, I undertook two long expeditions to Yemen as part of my programme to complete a doctorate on the butterflies of the Middle East. In those days Yemen was still a very remote place. In fact, it had been almost impossible for foreigners to enter for centuries. The traditional Imams had been dead against any innovation. They were under the nominal suzerainty of the Ottoman Empire, but the governor rarely set foot outside his pleasant office in Hodeida on the coast. On average he probably only saw the Imam in Sana'a once or twice a year.

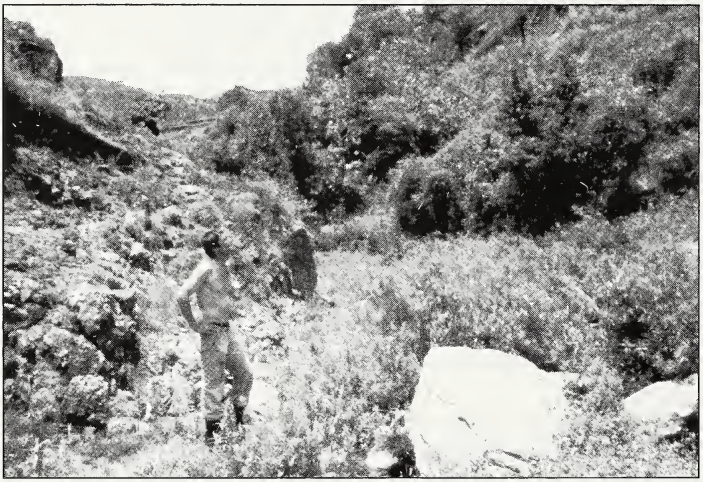
The First World War brought an end to Ottoman rule, but made the Imam even more determined to ignore the world around him. That could not last and during the 1950s and 1960s Nasserist republicanism simmered and then bubbled. In 1962, the Imam was deposed by his own army, which had developed revolutionary leanings. This led to a protracted civil war between royalists and republicans. Egypt intervened in the conflict – one already messy and stupid enough without outside intervention. At one point Egypt had 75,000 troops in Yemen and nearly bankrupted itself to no visible benefit to any of the parties involved. Egypt had to withdraw after its humiliation in the 1967 six-day war. Yemen had a succession of abysmal republican governments which hardly controlled their own administrative structures, much less the country. But by the mid-1970s a more or less decent government evolved that was generally accepted as a national government. By 1977, the country gradually opened up to foreigners and I took the opportunity to go. Yemen was potentially very interesting and little butterfly research had been done there. It also sounded like a pretty exciting place – even potentially hazardous! I had been advised to visit the Wadi Annah and the Wadi Dur below Ibb. When I got there an armed dispute between the government and the locals was going on. I said I had come all the way from London to study butterflies and that I really must reach Wadi Annah. The two commanders conferred and I was escorted with great courtesy across the frontline during a specially arranged ceasefire! One butterfly is now commemorated as *Neptis serena annah* – so a belated 'thank you' to the two commanders.

It *was* exciting – one of the most exciting things I have ever done. Butterflies were everywhere – from the savannahs of the Tihama coast, where temperatures are higher than on a bad day in coastal Baluchistan, to the cool mountains at above 2,500m. Working as Coordinator of Evaluation for the International Planned Parenthood Federation (IPPF) I had made an advance set of specified objectives for the expedition for the trip, with verifiable indicators. I do not think the Carlsberg Foundation was overly interested in this approach, but I was, and it was a fun thing to do since I spent most of my time insisting that others did so.

I was mostly at the top of my success criteria. My various trips to Yemen and Oman increased the known number of Arabian butterflies from 130 to more than 150. About a dozen were new species or subspecies. Very few additional species have been found in Arabia since then (I must update all this now that I have finalised my West Africa book). There have been some major range extensions, though

mostly unsurprising. History will have to judge whether I really combed the place or whether my many successors did badly!

My budget did not stretch to a personal vehicle – I had been too modest in my grant request to the Carlsberg Foundation (in fact these trips were in great contrast to my earlier trips to Oman, which even allowed the use of helicopters). Most of the time I used shared taxis, but sometimes I had to hire one for myself for a few days to get to very special places where I had been advised I must go. I do have a bit of Arabic. One of my drivers had been to the Gulf and had a smattering of English. He was deeply religious. We always stopped at prayer time, he to pray and me to check out the butterflies, but he bore his religion lightly. On the second day he suggested that I should convert to Islam. My Arabic did not stretch to a discussion about atheism so I replied that I lived in Christian country, my wife was Christian, as was my entire family – it would be rather awkward. He shrugged his shoulders: "We are all people of the book." During three months of roaming the remotest parts of Yemen, my status as a *Nasrani* (Christian) was never a problem.



Surveying a fantastic valley above Ibb. I caught a species new to science here and much else. I also seem to be much younger in 1980 than now.

I do not know how it is now, but in 1980 you could go anywhere and the local community was obliged to give you a bed – usually in the reception room that was used for qat-chewing sessions. Food and conversation, as much as could be managed with my Arabic, would usually follow. I would also be taken on a tour of the village to see the modest places of interest – a well that was built 200 years ago or a particularly nice footbridge – but I never had the feeling that my reception was an obligation – I felt genuinely welcome.

I also visited the Mission Hospital at Jibla near Ibb. When I was working with the IPPF in Beirut they had requested help with vasectomy. This request had dumbfounded us. In 1974 we could hardly talk about contraception in most Arab countries, much less surgical contraception, and Yemen was the very last place from where such a request might be expected. We sent a letter – yes, we might well be able to help – but what was the background to this? Yemen and vasectomy hardly added up. There was an interesting explanation. Many Yemeni men had learnt of vasectomy from the Indian expatriate community in the Gulf – at the time some 20 percent of all Yemeni men worked in the Gulf in menial capacities. The Indians were generally more educated and well versed in family planning: they provided informal communication channels with a vengeance. I met a nice Baptist doctor, Martha Myers. The laparoscope we had donated five years earlier was still in use and other family planning supplies had been received from IPPF. A couple of their staff members had attended IPPF training courses since I left Beirut for London. Family planning apart, the Jibla hospital was by far the best in Yemen and the dedication of the missionaries truly impressive. We had a pleasant dinner and evening – though I am still not fully comfortable with the "And Lord, we pray for the success of Torben's butterfly research and his safe return to London" bit on such occasions.

One of my hosts in Yemen, Leigh Douglas, was kidnapped and murdered in Lebanon, but this had nothing to with his role in Yemen. It is, however, with much sadness that I have to report that on 30 December 2002 Martha and two of her colleagues were shot dead by an Islamist fanatic. First, since Martha was a gentle soul, who gave much of her life to helping the Yemenis. Second, because this brutal act demonstrates such a change in the sensible and sensitive faith in Islam that I saw throughout my own extensive travels. I am sure my taxi-driver would have thoroughly disapproved, though come 2002, I am not very sure that he would have been willing to express his disapproval of this terrible act in public. That is perhaps the saddest part of the story.— Torben B. Larsen, UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland (E-mail: torbenlarsen@netnam.vn).

ANNOUNCEMENT: 3rd EUROPEAN MOTH NIGHTS: 28 – 30 APRIL 2006

The Hungarian Lepidopterological Society and the Entomological Society of Luzern (Switzerland) announce that the 3rd *European Moth Nights*, for 2006, will take place on 28 to 30 April 2006 (+/-1 day is still acceptable).

The aim is to present a wide-ranging snapshot of the macro-moths flying in a given period of time, with particular attention to species possibly or actually needing protection and those traditionally considered as migratory species. The data and the results obtained as well as their evaluation are to be made available to the general public.

The 2004 and 2005 *European Moth Nights* successfully brought together a large number of European lepidopterists, conservationists and many other people with an interest for a few days of wide-scale cooperation. We are convinced that the event strengthened unity and mutual understanding, whilst also offering an insight into the Lepidoptera fauna of the different countries and local methods of collecting.

The end of April has been chosen as the date for the 3rd EMN in order to expand the yearly updated total species list with vernal species. It will be especially interesting to see how many species can be observed at this early date (for that we need a high number of participants and collecting places) and it presents an opportunity to show non-specialists that nocturnal moths fly not only in the summer. Participants are reminded that they have, at their diposal, five nights for the purpose. This has been designed to avoid bad weather and to minimise personal commitments standing in the way of the program. You can collect on any or all of the selected dates, at the same place over 5 nights or at 5 different places in the same period. The project is confined to macro moths, including the families Hepialidae, Cossidae, Limacodidae and Psychidae. Only reliably determined species shoud be recorded; if you are uncertain regarding your determination of a specimen, please don't submit that particular record. Please respect all requirements of nature conservation; collection of protected species and disturbance of habitats is not acceptable.

Results should ideally be submitted in the form of the special Excel table that can be downloaded from http://lepidoptera.fw.hu/program/emn3/3emn2006_table.xls. The table includes all the data of importance in the project and by using it you make the work of evaluating and summarizing the results easier. Naturally, we also accept data in other formats. Results are requested via **e-mail** or, if not possible, by post to one of the following addresses:

Szalkay József
Magyar Lepkészeti Egyesület
(Hungarian Lepidopterological Society)
H-4033 Debrecen, Zoványi J. u. 19/B/9
(E-mail: inachis@t-online.hu)

Entomologische Gesellschaft Luzern
(Entomological Society of Luzern)
CH-6003 Luzern, Kasernenplatz 6
(E-mail: ladislaus.reser@lu.ch)

For those who like to plan in advance, the proposed date for the 2007 *European Moth Nights* is 12-14 October (+/- 1 day). More information is available at the following web address: http://lepidoptera.fw.hu/program/emn3/emn3.htm

Breeding *Chrysodeixis chalcites* (Esp.) (Lep.: Noctuidae), the Golden Twin-spot

On the night of 21 October 2005, TL caught a female *Chrysodeixis chalcites* in his 80watt mercury vapour light trap placed in his garden in St Neots, VC30 Bedfordshire (*antea*. 12). He brought the moth to BD to confirm his identification. The moth was left overnight with BD to photograph and when checked the following morning 47 eggs had been laid. The ova, which were creamy/yellow in colour were given to TL who kept them at room temperature. After four days the first ova hatched with the remaining 31 fertile ova hatching the following day. The larvae which were of the 'looper' type, were a pale yellowish green and would hang from a silk thread if disturb. They were kept in a dark airing cupboard at a temperature between 23° and 27° Celsius and fed on Common Nettle *Urtica dioica*. After a further four days the larvae shed their skins, which they ate and then after a further three days shed their skins again, and ate them as before. At this stage they became greener in appearance with legs shiny black, black spiracles and other small black dots along the body with seta tufts. On 4 November the larvae were split into two batches.

TL retained 19, which he continued to keep in the dark airing cupboard. BD received 13, which he kept approximately half a metre away from a central heating warm air vent, which kept them at a temperature of between 20° and 24° Celsius. The temperature was allowed to drop at night when the central heating was switched to a lower night setting. The larvae were kept in normal daylight conditions for the time of year.

The chart below shows the differences in development between the two environments.

	Batch TL	**Batch BD**
Split into two groups	4 Nov	4 Nov
Fourth instar	7 Nov	7 Nov
Fifth instar	11 Nov	15 Nov
Started to spin cocoon	17 Nov	19 Nov
First to pupate	20 Nov	21 Nov
First moths emerged	27 Nov	2 Dec

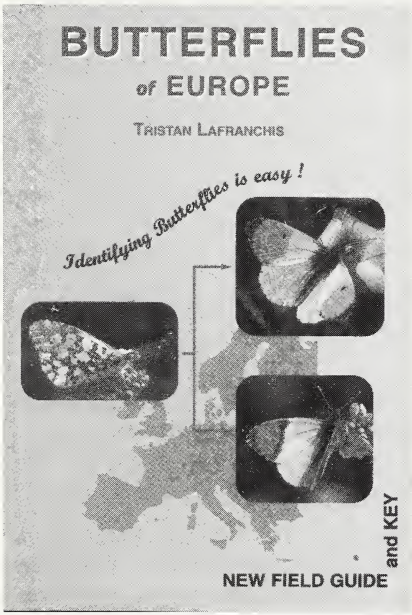
At the fourth instar the larvae turned a darker green with a distinct yellow lateral line, which they retained when changing into the fifth and final instar. A day before the larvae started to spin their cocoon they lost the yellow lateral line and became lighter in colour. The cocoon was flimsy and semi-transparent attached to any surface available: on the container or on remains of food plant.

For the first two days the pupae were a pale shiny green and then the dorsal side changed to a chocolate brown while the ventral side remained green. Just before emergence the pupae darkened in colour.

TL gave his moths to BD who put them in a breeding cage where they fed from a weak solution of honey-water, which was absorbed into cotton wool. The first pairing took place on 1 December with ova being laid the following day. The ova were laid individually and scattered over the netting of the breeding cage. Seventy larvae were retained from the first two days of hatching and a further twenty were retained from a late batch of ova, which were laid on 28 December. The larvae of the first new batch started to emerge on 10 December and were pupating on 30 December. They were placed in a cooler bedroom away from a warm air vent with the hope that their development would be slowed, but the first moths started to emerge on 19 January.— BARRY DICKERSON, 27 Andrew Road, Eynesbury, St Neots, Cambridgeshire PE19 2QE and TONY LAWRENCE, 3 Kipling Place, Eaton Ford, St Neots, Cambridgeshire PE19 3RG.

BOOK REVIEW

Butterflies of Europe by **Tristan Lafranchis**. 352 pp., 195 x 133 mm., numerous colour photographs, softback, ISBN 2 9521620 0 X. Published by Diatheo, 35 rue Broca, F-75005 Paris, France (lafranch@otenet.gr), 2005. £24 (cheques payable to the author).



This book approaches butterflies from a new angle — the identification of the entire European fauna from live individuals.

As a book intended for use out-of-doors it seems well-designed. It fits nicely in the hand; the weight of the paper used for the pages and cover, together with the positioning of the page numbers make for easy use. Page numbers are encircled, so that getting to a given page from a lead in a key is very easy by "flipping" through the book using one hand. Unfortunately, it will not open flat and springs closed when put down, which means that it will need to be placed face-down on the ground and knelt upon if the page is not to be lost.

Nomenclature appears to be up to date. After some introductory text that tells us how to use the book, as well as a Glossary of terms used, simple keys are presented on the right-hand page to break down the butterflies into groups and then species; the key couplets are illustrated with colour photographs, usually on the opposite left hand page. The keys are well laid-out and the typeface used is large enough and clear enough to be read easily whilst holding a butterfly in the other hand. The paired options in the key are easy to read and the couplet number, the next target couplet or the name of the butterfly printed in bold type so that these stand out and can be spotted at a glance. So far so good and it appears that some thought has gone into this work, but now I

have two questions: First, do the keys work and second, can they really be applied to a live butterfly.

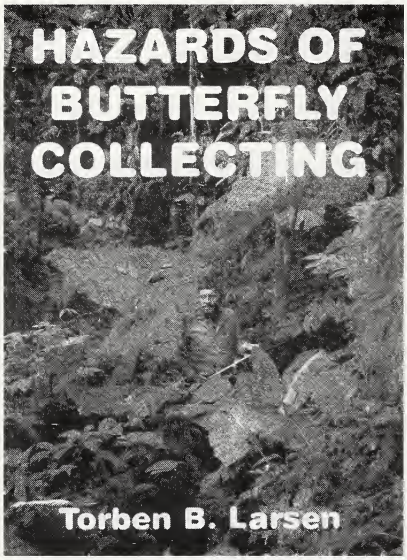
In general, the answer to the first question is "yes" though there are areas that cause concern; presumably, the author will be keen to learn of any difficulties encountered so that any future revision can improve the keys. For example, "the largest Ringlet" versus "Size medium" (page 259, couplet 13) is hardly likely to separate the two species whose ranges overlap in north-west Spain. There are other examples that could be quoted if space permitted though, it has to be said, only relatively few. Since this book has been reviewed over the winter period it has, of necessity, been tested against dead museum specimens and so the couplets that rely on colour, which alters *post mortem* in some species, may have been difficult to interpret. However, the author never intended the book to be used on dead specimens and so this is not a valid criticism. Overall, the characters selected do seem likely to work; in many cases they may also be used in conjunction with the adjacent distribution map to rule out geographical impossibilities.

The answer to the second question is less clear cut. In many cases, possibly the majority, the answer is certainly "yes", although it would take at least one full season of field testing to provide a more reliable assessment. Equally, however, there are species that I feel quite sure would be very hard to name accurately alive in the field and a relatively small group within that which I am confident will still require collection and laboratory study no matter how hard the author tries. He alludes to this himself, in his introductory text, stating that "In very few cases, reliable identification requires examination of male genitalia". However, he continues with an implication, perhaps unintentional, that other than in the case of some of the small species of "blues" it can be done with living examples. I find this disappointing; clearly the author is not in favour of butterfly collecting, a view to which he is entitled, but in presenting an alternative means of naming species I suspect he has not been quite as diligent as he might have been in identifying problem areas that are not yet resolved. This does his cause no favours. In fairness, the author does say that his key is for use on live butterflies *at close quarters*, through a pair of binoculars or held inside a plastic bag or clear topped box; perhaps this could have been emphasized rather more – I think it likely that the casual reader will inevitably try to name species without even using a net. This reviewer does occasionally collect butterflies when undertaking invertebrate recording work overseas and a means of identifying butterflies easily, quickly and *reliably* would be of great benefit to me as it would save me having to paper and bring back specimens unnecessarily. Unfortunately, whilst the author presents what is basically a good idea he spoils it with occasional ill thought-out remarks, for example his calling for collecting to be reserved for small insects of difficult orders (presumably all large insects are easily named?) and banned completely in the case of butterflies and dragonflies. A case of "big is beautiful" whilst small and brown don't matter, I feel. There are, of course, different types of "collecting" and there is a vast difference between the hobby collector with empty cabinet spaces to fill and the entomologist who collects only those that he/she is unable to name in the field and later provides lists to those who need them for conservation-friendly land management. Readers' views will vary, but if shots are fired at the former the latter may get caught in the crossfire and that, in my opinion, is not helpful to butterfly conservation. To give an example: collecting any insect without a permit is illegal now in Spain (although torturing bulls remains an acceptable leisure activity) and so presumably here one would want to use this book. Unfortunately, to make sure we don't cheat, the Spanish have also banned the use of nets and so the suggested close-quarters examination of a butterfly held inside a plastic bag or clear topped box is itself illegal! Obtaining ecological information for Impact Assessment of development projects is nigh on impossible and vast areas of butterfly habitat are being lost for ever.

The book goes a long way towards making it possible to name many butterflies in the field, but the claim that this book achieves this for all species is little premature. I fully agree that butterflies are much nicer on a flowery hillside than in a line in a cabinet, but without truly reliable data on distribution, phenology, habitat requirements and so on – all of which have their basis in absolutely accurate species identification – it is increasingly hard for us to encourage habitat conservation. The author has, nevertheless, presented a work that will set the ball rolling and if for no other reason, you should buy it so that you can comment on and so help improve the keys.

Colin W. Plant

Hazards of Butterfly Collecting by **Torben B. Larsen**. 250pp., 205 x 147 mm., paperback, ISBN: 0 9548375 0 9. Published by Cravitz Printing Co Ltd, 1 Tower Hill, Brentwood Essex CM14 4TA (cravitzprinting@btconnect.com), 2005. £11.99 including UK postage.



A compilation of previously published accounts, with numerous illustrations and black and white photographs, this book is entitled "Hazards of Butterfly Collecting", though it would be more accurate to describe it as about the adventures, hazardous or not, of a lifelong butterfly collector going about his business. And as someone else who spent his formative years running around in suburban Nigeria with a butterfly net, and who suffered the discomfort and indignity of a driver ant attack at an earlier age than the author, I can write with some experience, if not authority, on his ramblings.

That's not to say that there are no genuine hazards described; carrying crystalline cyanide on one's person is certainly one, as is demonstrated. Also, as any serious butterfly collector will tell you for free, the best butterfly collecting spots are usually in the wildest areas where the vegetation is as untouched by man as possible. And the best in the world is primary tropical rain forest, which is often to be found in politically unstable and inhospitable places. Hence the possibility of being arrested by drunken local soldiers waving machine guns around can be a real hazard, as can be the afore-mentioned driver ants, along with ticks, leeches and the usual mosquitoes. However, it's not all like that; many of the stories are of a non-hazardous variety and reflect some of the people, places, butterflies and other fauna that the author met with on his lepidopterous excursions.

The author has named many butterflies, and has had some named after him; whether he actively seeks such 'firsts' is not clear, but if the book is anything to go by, then maybe he does — I can't think of many butterfly books that include pictures of both Tintin and Saddam Hussein, and in which the author admits to trying opium, and even finds a place to fit in the 'F' word!

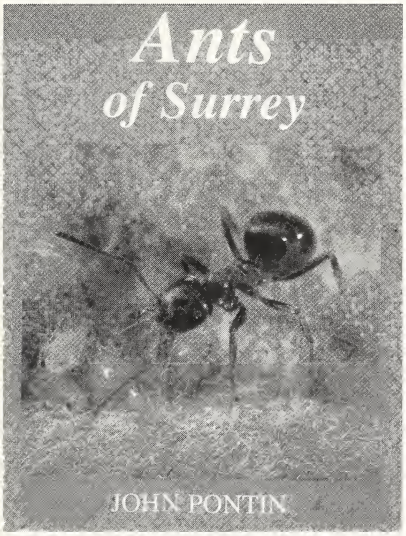
The book contains 115 short stories and anecdotes, covering over 35 countries and six decades of collecting. The stories average around two pages long and are arranged into nine chapters. The author writes that "the stories could have been grouped in several ways". Indeed!

Though neither a travelogue, nor a scientific treatise, an index would have been handy to allow anyone to return quickly to a particular episode. That and a few minor typos apart, the only downside of the book is that the photographs, especially of the butterflies themselves, are not in colour.

Overall, this is an easy and interesting book to read, and reflects the author's attempt to describe the "lighter side" of entomology. His sometimes subtle and always warm humour is present throughout – but I suppose I do not need to say that to readers of this Journal.

Jon Baker

Ants of Surrey by **John Pontin**. 88pp., 16 colour plates, 218 x 153 mm, hardbound, ISBN 0 9526065 9 3. Published by Surrey Wildlife Trust, 2005. £14 plus £2.40 UK postage and packing, from the publishers at School Lane, Pitbright, GU24 0JN.



This is the latest offering from the Surrey Wildlife Trust in their widely acclaimed series on the fauna of that county; I cannot understand why other counties have not followed their lead! Ants are here covered in splendid fashion by acknowledged expert John Pontin and maintain the now established tradition of high standards in accuracy and presentation. The work adheres to the format established in the earlier volumes on Shieldbugs, Hoverflies, Larger moths, Butterflies, Ladybirds, Dragonflies and Grasshoppers & crickets, all of which have been reviewed in earlier issues of this journal (a further volume is available on the amphibians and reptiles but has not been seen by us). Despite being heavily urbanised in places, Surrey evidently boasts 30 of our 42 native British ant species including *Formica rufibarbis* which, the introduction claims, is arguably "the single rarest animal in mainland Britain", having been reduced to such a low population that now only four nests remain.

Use of the identification key, which covers the worker caste only and so will not work for males or for queens on the occasions that these may be found (e.g., "flying ant" swarms), leads to text that is presented for 33 species; the following text section lists a further 11 species found in southern England, but not yet found in Surrey. From this it is clear that the advertised total of 42 has been exceeded and so some non-native taxa are clearly included in the keys. It is a great pity, therefore, that the work does not appear to include a checklist of British species, with those that are aliens and those present in Surrey indicated. This would surely have been no real effort and may have made the key far more attractive to people who have never been to and are unlikely to go to Surrey, thus boosting sales potential. Discussion with colleagues leaves no doubt that Roger Hawkins' Shield Bug key, in particular, in this series is used widely throughout Britain (whether via purchase or illicit photocopying I am not quite sure!); I am not sure that John Pontin's ant key will have the same universal appeal, even though it is far easier to use than some other offerings I have seen. Exactly what are the 12 native species (42 British

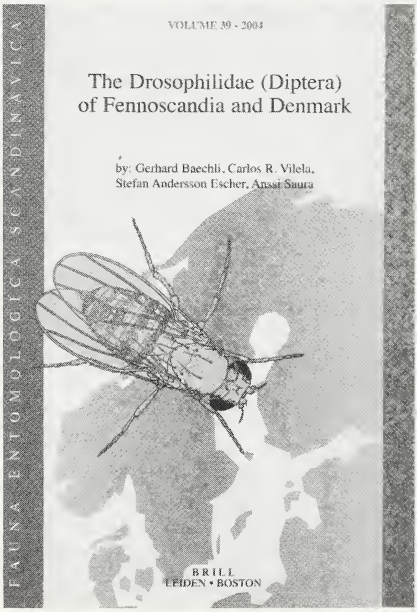
minus 30 that are included), that are not found in Surrey and in which parts of Britain are they found? Can I use this key in the neighbouring counties of Kent and Hampshire? Without effort, I cannot tell.

Granted, ants are somewhat harder to name, and often a number of specimens are required from a single nest so that the range of variation in a single feature can be characterised and used in the key – ant identification and conservation is an area that the anti-collecting brigade would be wise to avoid! What I especially like about Pontin's key is the clear language used. Gone are words like "carinae" and in are "ridges" and other far more familiar terms that describe the characters just as accurately without resorting to pomposity. Difficult characters are clearly illustrated with simple drawings. I seem to have only 16 species in my permanent collection, but all these key out without any particular difficulty using the keys in this book.

Beyond the keys, the book provides a summary of the current status of ants in Surrey – a county that has some important heathland habitat, amongst other kinds, that is surely under increasing pressures as the relentless advance of the built environment continues to the supposed benefit of the human race. This book makes an immensely important contribution to what we are currently calling "biodiversity research" and anyone who is a friend of natural and semi-natural habitats ought to buy this book, both because it is very good and as a gesture of support for a Wildlife Trust that actually acknowledges the existence of invertebrates!

Colin W. Plant

The Drosophilidae (Diptera) of Fennoscandia and Denmark by **Gerhard Baechli, Carlos R. Vilela, Stefan Andersson Escher & Anssi Saura.** ***Fauna Entomologica Scandinavica* volume 39 (2004)**. 362 pp., 250 x 175 mm. hardbound, ISBN 90 04140 74 3. Published by Brill Academic Publishers, Plantijnstraat 2, PO Box 9000, 2300 PA Leiden, Netherlands, 2004. €90 (approximately £62). Available from the publishers through Extenza Turpin Distribution Services, Biggleswade, Bedfordshire.



The series of works that form *Fauna Entomologica Scandinavica* include some that are the principal texts for the identification of British invertebrate species and this latest offering is unlikely to be an exception. It presents an account of the 128 species, in 17 genera, occurring in Western Europe, providing keys for all the genera and for 120 species. Eighty of the species that occur in Britain and which are also present in Fenno-Scandia are included and the male genitalia are illustrated for each.

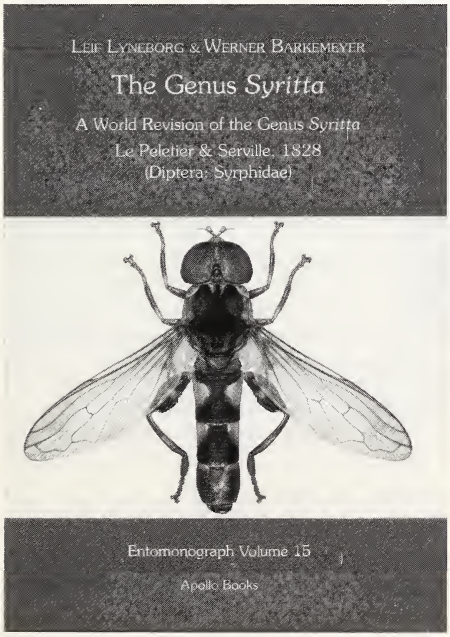
The book opens flat on the bench (a detail that is often overlooked by publishers but one that is of great advantage in the laboratory). After a general introduction the main key to

genera is presented. I have tested this on examples of *Scaptomyza* and *Drosophila* – both chosen because they fall out towards the end of the key and so involve a greater amount of couplet testing. I had no difficulty with either. The only "beef" that I have is that in arriving at a genus the page number where this may be investigated is not given and one has to resort to the Index. Three species of *Drosophila* from my collection ran through the species key to the correct answer with a little effort, but no problems, once I had found the correct page. Clear line drawings permit easy recognition of all relevant features and the text, which as always in this series is in English, contains a vast wealth of new and important information.

This work is an essential resource for anyone attempting the identification of drosophilids in Britain and is a welcome addition to a series that already has an outstanding reputation for accuracy and clarity.

Colin W. Plant

The genus *Syritta*. A world revision of the genus *Syritta* LePeletier & Serville, 1828 (Diptera: Syrphidae) by **Leif Lyneborg & Werner Barkemeyer**. **Entomonograph volume 15**. 224 pp., including descriptions of new species. 240 x 170 mm., hardbound, ISBN 87 88757 53 6. Published by Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark (apollobooks@vip.cybercity.dk), 2005. DKK 420 (approximately £38.60 at March 2006 exchange rate) plus postage and packing. Apollo offer a 10% discount on orders placed direct with themselves.



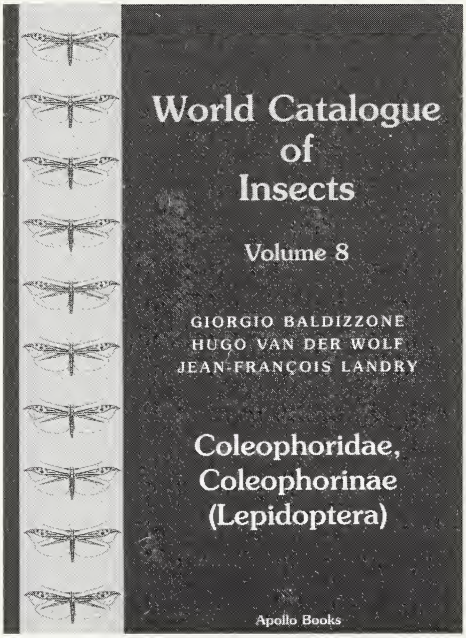
Hoverflies (Diptera, Syrphidae) rank amongst the best-studied groups of invertebrates, certainly within the Diptera. This work takes the form, primarily, of a lengthy revision of the Afrotropical members of the genus, but has been extended to cover the species of *Syritta* present in the remaining biogeographical regions of the world to create a complete monograph of the genus. A World Checklist is presented and lists a total of 57 species, of which 33 are described as new to science in this work – a significant advance in our knowledge! A further three species are listed as *Incertae sedis*. Separate keys to males and females are presented, but I have only been able to test these on the single British species as I do not have any material from the Afrotropical Regon at my disposal.

The genus is represented in the Palaearctic Region by only six species (and in Britain by just one – *S. pipiens*

(Linaeus, 1758), which is widespread and abundant). This work will, therefore, have only limited appeal to those working outside the Afrotropical Region, but it is nevertheless a masterpiece of taxonomic research that will provide a sound platform from which further studies on the Afrotropical hoverfly fauna may be launched.

Colin W. Plant

World catalogue of insects. Volume 8: Coleophoridae, Coleophorinae (Lepidoptera) by **Giorgio Baldizzone, Hugo van der Wolf and Jean-François Landry**. 215 pp., 240 x 170 mm., hardbound, ISBN 87 88757 76 5. Published by Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark (apollobooks@vip.cybercity.dk), 2005. DKK360 (approximately £33 at March 2006 exchange rate) plus postage and packing. Apollo offer a 10% discount on orders placed direct with themselves.



The latest contribution to this important series covers the genera *Augasma*, *Coleophora*, *Goniodoma*, *Ischnophanes* and *Metriotes*. Although the authors state clearly that this catalogue is not the place to present nomenclatural changes that ought to be published as separate papers, they nevertheless present felt the need to introduce some 19 new synonymies and eight new combinations as well as establishing *Nomina protecta* in the case of *Coleophora currucipennella* Zeller, 1839 and *Coleophora discordella* Zeller, 1849. They also fix the type for three species, based on earlier published recommendations of other workers (*Aureliana* Căpuşe, 1971 – type species *Coleophora benanderi* Kanerva, 1941; *Bacescuia* Căpuşe, 1971 – type species *Coleophora suaedivora* Meyrick, 1828; *Lucidaesia* Căpuşe, 1973 – type species *Ornyx alcyonipennella* Kollar, 1832). Appendices cover *Nomina nuda* and rejected names, incorrect spellings and Taxa excluded from the Coleophorinae. A scholarly work that will form an important resource for all who are conducting research in this region of the world's Lepidoptera.

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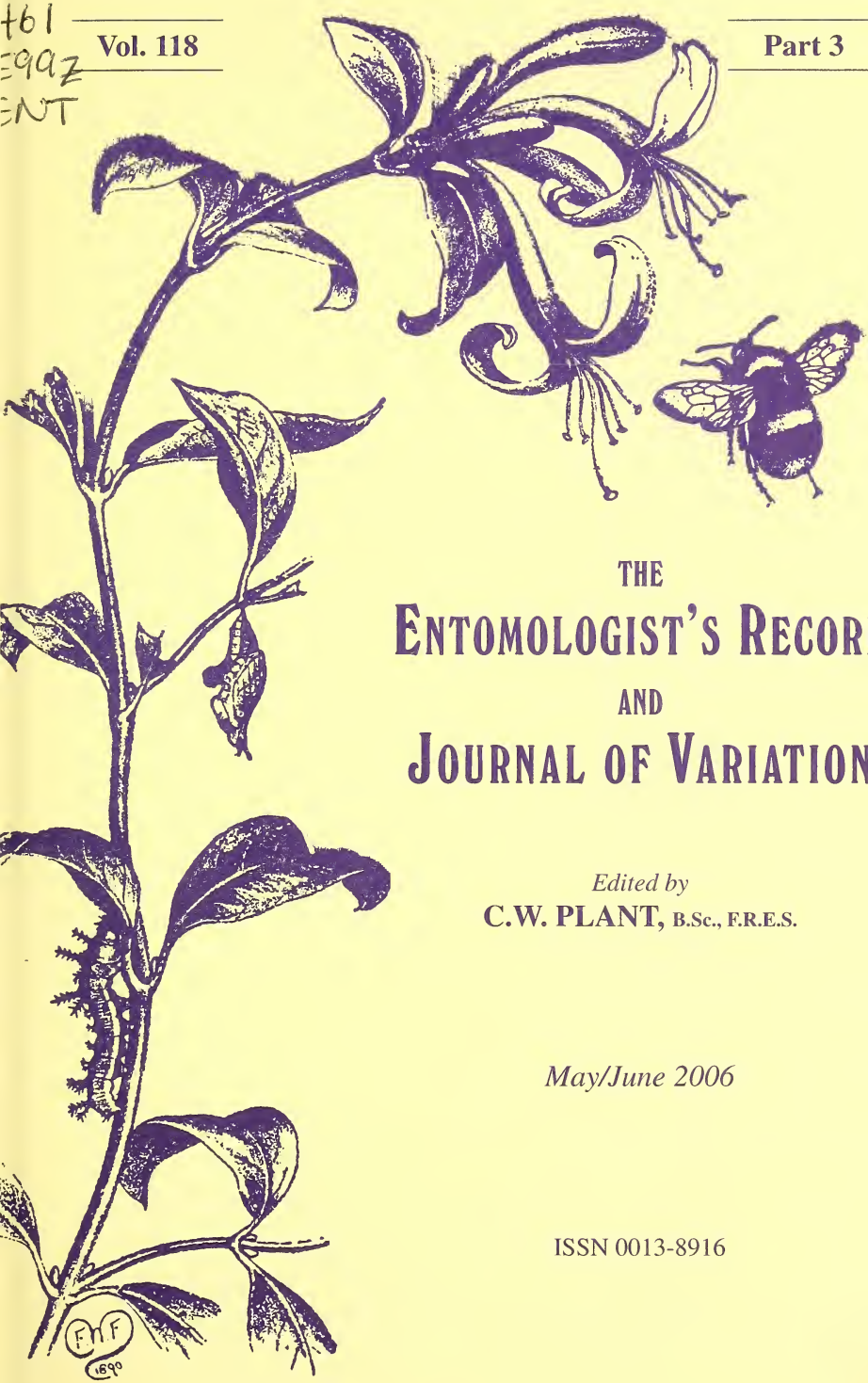

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Editor

C.W. PLANT, B.Sc., F.R.E.S.

14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

Registrar

R.F. McCormick, F.R.E.S.

36 Paradise Road,
Teignmouth, Devon TQ14 8NR

Treasurer

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- **Papers** should be at least 2000 words in length. Acceptance is not automatic. They will be peer-reviewed by two referees. Authors must be prepared to make modifications suggested by the referees. Papers must cover their subject matter to a far greater depth than Notes and should present original material or a broad-based review of existing knowledge. Descriptions of new species may be submitted. Authors of papers are expected to follow the house style and conventions as closely as possible. The Editor reserves the right to convert papers into Notes.
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THE STRIPED LYCHNIS MOTH *SHARGACUCLLIA LYCHNITIS* (RAMBUR) (LEP.:NOCTUIDAE): A REVIEW OF ITS DISTRIBUTION IN BUCKINGHAMSHIRE (VC 24) DURING 2005

[1] PETER HALL, [2] ANDREW MCVEIGH, [3] MARTIN ALBERTINI

[1] *Melanthia, Chiltern Road, Ballinger Common, Great Missenden, Bucks HP16 9LH. (E-mail: peat.hall@virgin.net)*

[2] *Bucks County Council Countryside Initiatives Team, County Hall, Aylesbury, Bucks HP20 1UY.*

[3] *11 Hargrave Road, Maidenhead, Berks, SL6 6JR.*

Abstract

The results of a larval count for the Buckinghamshire population of the moth Striped Lychnis *Shargacucullia lychnitis* (Rambur) during 2005 is summarised. A total of 5,075 larvae was found on 37,710 Dark Mullein *Verbascum nigrum* plants. Results are split into habitat types. Current and historical distribution are discussed as are current and future conservation measures.

Introduction

The Striped Lychnis moth *Shargacucullia lychnitis* (Rambur) is a Nationally Notable category A species (Waring, 1993; Bradley 2000). This implies that it has been recorded or is expected to be present in between 15 and 30 ten-kilometre squares within Britain. Recent surveys since 1991 reveal its presence in 10 ten-kilometre squares within Buckinghamshire. Originally placed on the 'middle' list of the UK Steering Group report (HMSO, 1995), the moth now resides on the re-structured 'priority species' list (UK Biodiversity Group Report, 1998). There has been a Species Action Plan published (UK Biodiversity Group, 1998) which summarises the position of the moth up to 1996. It states "This moth was found in scattered sites in 23 ten km squares between 1980 and 1996, in Buckinghamshire, Oxfordshire, Berkshire, North Hampshire and West Sussex. Its range has declined greatly, and within the last 25 years or so it has been lost from half of its range, including all of Wiltshire, Dorset, Surrey, East Anglia and Gloucestershire. In Europe this moth occurs in most countries from the Mediterranean to Denmark and southern Sweden. The range extends to central Asia, the Caucasus, the Urals and Russia."

In recent years, surveys within Buckinghamshire have occurred at regular intervals (Waring 1992; Albertini *et al* 1997; Halls 1997; Hall 1998, 1999, 2000, 2001). During 2005, a further large scale survey was undertaken to review the moth's current status within the county. In total, 37,710 Dark Mullein *Verbascum nigrum* plants were inspected revealing 5,075 larvae over a three week period from the second half of July until early August 2005. These surveys provide the basis for the local Species Action Plan for the county which is undertaken by Buckinghamshire County Council Countryside Services (Buckinghamshire County Council, 1997) in conjunction with Butterfly Conservation.

Results and Discussion

The survey began as near to 23 July as possible, as with all previous surveys. The survey did not manage to record all larvae – a few had already pupated and the final

plants being inspected around 10 August still revealed first instar larvae; this "mid" date does provide a good insight into population size. Large sites on warm south facing chalk slopes were inspected first as these traditionally tend to have more advanced larvae. Plants were counted rather than flower spikes in the results summaries. An average plant would have between 1 and 10 spikes, with a modal figure at 3-4. As with previous surveys there was evidence that some larvae had already pupated. These were not included in the results. Nor were dead parasitised larvae mummified on the flower spikes. Flower spike damage can also be caused by the earlier feeding larvae of the Mullein moth *S. verbasci* and also by weevils of the genus *Cionus,* making damage or frass on the lower leaves an unreliable means of detecting larvae. Where Great Mullein *V. thapsus* was found, these plants were inspected also but not included in the results as no larvae were found on this species at all. Larvae were noted in small numbers on the hybrid *V.* x *semialbum* and these results were included. However, numbers of x *semialbum* were few.

Light trap records of the moth in the county are still very few despite extensive trapping in the distribution area, so larval searches still provide the best insight into the moths' distribution. Larvae show a distinct preference for feeding on the flower spikes and will only be found on the lower leaves if competition for space and food on the spikes is too high (Albertini *et al* 1997). Fortunately the majority of tiny first instar larvae were at or close to the very tips of flower spikes making location and identification relatively easy. Larger larvae were conspicuous and highly visible. Plant locations, flowering times and the impact on the potential for larval presence were all outlined in Albertini *et al* (1997). It was again apparent that tall plants in sunny aspects that were in flower by mid July, with little competition from other vegetation, had the best chance of larvae being present. Particular plants (that fitted this bill) on occasion would be smothered in larvae. Over 80 larvae were counted on one such plant. This same plant had over 100 larvae on during the previous major survey in 2000. The "biennial" status of *V. nigrum* was discussed in Albertini *et al* (1997). Where there were large stands of suitable plants in areas of high larval numbers, often individual plants would have far more larvae than other seemingly identical plants. These tended to be at "corners" or "edges" to stands of foodplant.

This survey was the largest ever conducted and results are very encouraging. The overall picture is one of improvement. Apart from one core site which suffered damage from ditch clearance work in the winter of 2004/5, all other sites are improving. The site near to High Wycombe that had 1103 larvae recorded in 2001 (Hall 2002, Waring 2001), but subsequently suffered from overgrazing, is now under closer scrutiny and is recovering, albeit slowly. Ironically, it has gone from being severely overgrazed to being over-run by Wild Carrot *Daucus carota.* It is likely that the increase in *Daucus* was due to the effects of the overgrazing as Preston *et al* (2001) states that this species prefers calcareous soils including disturbed or open turf on chalk downs. It is hoped that things will balance out in the longer term. *Daucus* stands meant that the flower spikes of *V. nigrum* were probably in too much competition for preferred egg laying.

Table 1 shows the summary of the survey results. All habitat groups show an improvement apart from Fields and margins. However, this figure is slightly deceiving in that the large numbers of plants falling into this habitat group were swollen by one site which now has a grand total of 10,175 plants spread over four adjacent fields, but a very low density of larvae (Tall False Oat Grass *Arrhenatherum elatius* meant relatively unsuitable egg laying habitat for the moth). Total numbers of larvae increased for this group also when compared to 2000.

The concept of Core Sites has been discussed (Albertini *et al* 1997, Halls 1997, Hall 1998, 1999, 2000, 2001). It was interesting to note that the High Wycombe core site, for example, was presumed to exist before its discovery due to the appearance of low numbers of larvae in adjacent sites. So far, from five core sites identified in 2000 (Hall 2001), using the threshold of 100 larvae or more to define a core site, there have been additional discoveries and further amelioration of existing sites to now have the total stand at 11 Core Sites for the moth. This is a far more healthy state of affairs.

Of the four major habitat groups, road verges are still the preferred habitat for the moth with the best ratio of plants to larvae, although the proportion of larvae being found in this habitat diminishes with each survey. The second best habitat is Chalk Grassland, followed by Woodland. This last grouping is a little deceiving as almost all of the records are in young planted woodland (mainly on chalk grassland sites) that will soon compete out the foodplant. The last of the major habitat groups is Farmland fields and their margins, including set-aside. If the huge area already discussed above is removed from the Fields and Margins total, the ratio changes from 10.9 down to 7.2, indicating that this habitat is also fairly popular with the moth.

The overall range of the moth is not expanding at all. This has been the case for a long time (Albertini *et al* 1997) and is more a factor of foodplant availability rather than anything else. Figure 1 does show that the larval numbers are increasing but within the current boundaries. Total larval numbers follow a similar graphical trend to Figure 1 which only relates to sites that have been surveyed since 1996. The 2005 survey shows a steep upward curve, reflecting large increases in both foodplant and larval numbers. Figures 2 and 3 show the distribution of the moth in the county. Dots in the more easterly central parts of the county are more sporadic and are the result of mainly transient records. There is no core site in this area.

Action

Efforts to conserve populations of Striped Lychnis have included the designation of Roadside Verge Nature Reserves (RVNRs) and the implementation of favourable cutting regimes for these areas (Buckinghamshire County Council, 1994). For these sites, cutting has been deferred until September allowing larvae to successfully progress to the pupal stage. On some sections of verges cutting is necessary for safety reasons and in these instances contractors have been requested to avoid cutting individual *Verbascum* plants – the large flowering spikes can be seen with

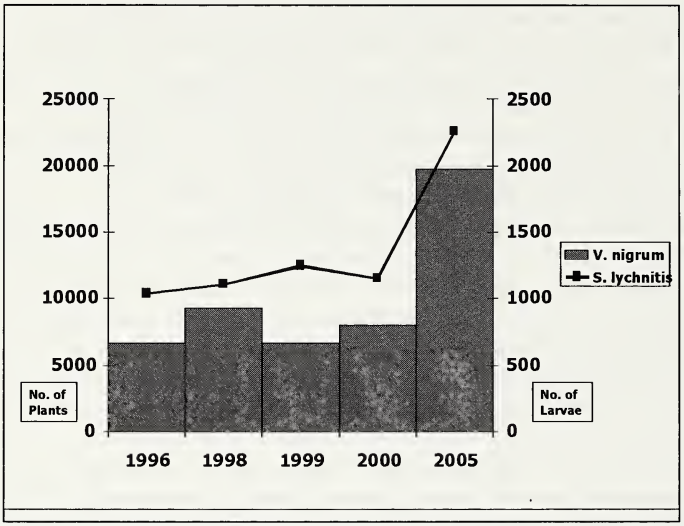

Figure 1. Larval and foodplant population trends based on comparable sites from 1996-2005.

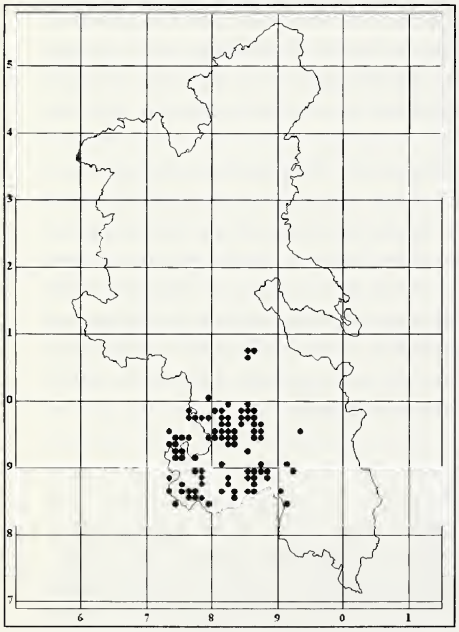

Figure 2. Distribution of sightings of Striped Lychnis in Buckinghamshire during 2005.

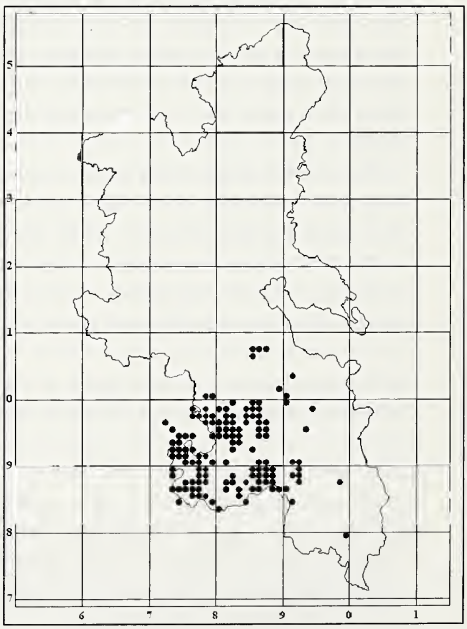

Figure 3. Distribution of sightings of Striped Lychnis in Buckinghamshire during the years 1991 to 2005.

Table. 1. Group Habitat results.

Habitat Group	Total Plants	Total Larvae	Ratio P/L	Increase Decrease
Road Verges	3707	1175	3.2	Increase
Fields & Margins	24300	2227	10.9	Decrease
Chalk Grassland	7065	1105	6.4	Increase
Woodland	1674	192	8.7	Increase
Churches & Gardens	364	173	2.1	Increase
Footpaths	330	160	2.1	Increase
Railways	270	43	6.3	Increase
All	**37710**	**5075**	**7.4**	**Increase**

relative ease enabling operators to ensure that some plants are retained. To assist this process a 'cab-card' containing information on management requirements and identification of the foodplant was produced and distributed to contractors (Halls, 1997). To date, results have been variable, in less favourable instances resource and time constraints proved to be the limiting factors. This will be reviewed again in 2006. In a small number of cases other highway activities e.g. ditch clearance have also contributed to the loss of foodplants, however, this may not prove damaging in the long term as the increased availability of bare ground provides recruitment opportunities for *Verbascum*.

Away from the highway network land, Set-aside and other agri-environment schemes have created new areas for the foodplant and moth to colonise. The presence of such land can encourage population expansion and reduce negative affects associated with fragmentation of sites. Whilst these schemes offer positive benefits, complications may arise particularly with Set-aside and the timing of compulsory mowing, which result in the loss of flowering spikes and larvae. This problem can be countered by using derogation options that allow cutting to take place later in the season (DEFRA, 2005). On agricultural land the fortunes of Striped Lychnis are likely to mirror the changing character of agri-environment schemes. Data collected during surveys will inform action to maximise conservation benefits using these land management mechanisms.

During 2005 production of a Strategic Environmental Assessment for Buckinghamshire County Council, as part of their Local Transport Plan process, has included RVNRs and proposes that they should be "given an appropriate level of protection by recognising management schedules which have been developed for each site" (TRL, 2005). This gives renewed impetus for action on the RVNR network to enhance these areas for nature conservation. Furthermore, Striped Lychnis has been put forward as an indicator species for the quality and quantity of roadside habitats, thus acknowledging the importance of this species and the role highway management can play in its conservation.

Future Surveys

The surveys of 1996, 1998, 1999, 2000 and now 2005 have shown that the overall position is sound for the moth. With this information in hand, the next major survey has been targetted for 2010. Until then, specific sites will be monitored annually and the search for new sites will continue.

Acknowledgements

Thanks go to Butterfly Conservation, Buckinghamshire County Council Countryside Services and the National Trust for their continued support of the species' action plan. Special thanks go to the following people who gave up their spare time and holidays to help with the surveying during an often wet and miserable period at the end of July and early August: Julia Carey, Anna Humphries, Eric Britnell, Alan and Juliet Gudge, Simon Pile, Ched George, Neil Harris, Jo Hodgkins, Martin Barnett and Trevor Hussey. The maps were plotted using DMAP software by Dr Alan Morton.

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Feathered Thorn, *Colotois pennaria* (L.) (Lep.: Geometridae: A very late record in Bedfordshire

My wife Melissa and I were walking along a path next to the main drive at the Headquarters of the Royal Society for the Protection of Birds at The Lodge, Sandy, Bedfordshire (VC 30) on the afternoon of 16 January 2006 when she spotted a moth low down on the trunk of a tree. Taking a closer look it was apparent that it was a female Feathered Thorn *Colotois pennaria*. This is a species that we normally see in our garden trap in mid-autumn. Skinner (1984. *Colour Identification Guide to Moths of the British Isles*. Viking) records mid-September to mid-November as the adult flight period; South (1906-7. *The Moths of the British Isles (Series 2)*, Warne) lists October and November; Waring & Townsend (2003. *Field Guide to the Moths of Great Britain and Ireland*. British Wildlife Publishing) list mid-September to early December. For Bedfordshire, Arnold et al (1997. *The Butterflies and Moths of Bedfordshire*) give weeks 38 to 48 for Bedfordshire [17 September to 2 December] with the peak in weeks 41 to 45 [8 October to 11 November].

I checked with the macro-moth recorder for VC30, Les Hill, and the recorder for adjacent Hertfordshire (VC 20), Colin Plant; both confirmed they had no records of the species being seen any later than the first week of December. I subsequently checked with recorders for other adjacent vice-counties: Buckinghamshire (VC 24), Huntingdonshire (VC 31) and Northamptonshire (VC 32). The latest record from these was mid-December in VC 32.

This find of a live Feathered Thorn in mid-January is exceptionally late though many fewer light traps are put out in December and January so there is less recording effort at this time of the year. I would like to thank the following people for checking their vice-county records for me: M. Albertini (VC 24), B. Dickerson (VC 31), L. J. Hill (VC30), C. W. Plant and the Herts Moth Group (VC 20) and J. Ward (VC 32).— ANDY BANTHORPE, 32 Long Close, Lower Stondon, Bedfordshire SG16 6JS.

SUBSCRIBER NOTICES

The National Macro-moth Recording Scheme

Butterfly Conservation is delighted to announce that, after several years of careful planning and hard work, the bid to the Heritage Lottery Fund (HLF) for funding for the National Macro-moth Recording Scheme has been successful. The award is for £806,000. This funding will cover the initial four years of the scheme, though we intend the scheme to run beyond this.

Many of you will be aware of the higher profile 'Planning Phase' of the project, which took place during 2003 and 2004, with articles appearing in several journals subsequently – we would like to take this opportunity to thank all of you who contributed and supported this part of the process. We would also like to thank the many organisations and individuals who have offered matched funding for the

scheme itself, this was an essential requirement for the HLF and helped us demonstrate wide support for the project at both local and national levels. Fundraising is not quite complete and efforts will continue to try to raise the additional costs required.

At the time of writing there were still many contractual details to sort out with the HLF and a precise timetable for the project had not been formulated in detail. However, it is hoped that a Project Manager would be in post by the end of summer/early autumn 2006 and that the scheme would start in earnest at around this time. We will keep you informed of further developments (see also website www.mothrecording.org.uk).

This is very much a partnership project with Butterfly Conservation taking the lead. A Steering Group will be formed and will have representatives from a range of organisations, including, hopefully, the British Entomological & Natural History Society, the governmental conservation organisations, at least one County Recorder and a representative from a local moth group (although this could be the same person).

This is a very exciting development for the recording of moths and moth conservation, we look forward to working with you and hope you can all contribute to making this project a success.— MARK PARSONS, Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP

The Moths and Butterflies of Great Britain and Ireland

Harley Books are delighted to announce the sale of their series *The Moths and Butterflies of Great Britain and Ireland* to Apollo Books Aps, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark; Tel. 00 45 62 26 37 37; Fax. 00 45 62 26 37 80; email: apollobooks@vip.cybercity.dk; website: www.apollobooks.com. With three of the ten volumes yet to be published – Vols 5, 6 and 8 – Apollo Books, who are leading publishers of multi-volume works on European and world entomology, plan to complete the series. Dr K. P. Bland, Pelham-Clinton Curatorial Fellow at the National Museums of Scotland, Edinburgh, an Associate Editor and a contributing author to two volumes in the series, has been appointed Editor. All standing orders are being passed to Apollo Books and henceforward all matters relating to sales of this work, including orders for published volumes, should be referred to them. Apollo Books will continue to use Harley Books' distributors and therefore British orders will be despatched from the UK. Orders for all Harley Books'other titles should continue to be sent to Harley Books.

CHANGES IN THE BEHAVIOUR OF DOUBLE-BROODED MACRO MOTHS IN YORKSHIRE

CHARLES H. FLETCHER

The Forge, Hutton Conyers, Ripon, North Yorkshire HG4 5EB.

(E-mail: chfletcher@btinternet.com)

Abstract

Current literature suggests that many species of Lepidoptera are bivoltine in the south and univoltine in northern England. A list is given of 36 species of macro moths where flight times in Yorkshire contradict published sources. Some of the most dramatic recent changes are illustrated by histograms. Climate warming is likely to be the main factor driving these changes.

Introduction

Many species of moths are well known to be bivoltine (having two broods) in the south and univoltine (having one brood) in the north. The factors governing this are not always obvious but seem to be largely due to the effects of increased temperature on larval growth rate along with altitudinal and habitat effects (Young, 1997). As many larvae feed nocturnally to avoid predators, longer nights further south may also provide more time for larval growth (Leverton 2004). Genetic factors are also involved and there may be positive benefits in having only one brood where the climate is uncertain (Leverton, 2001).

Sutton and Beaumont (1989) in Butterflies and Moths of Yorkshire stated "only a few moths and butterflies are regularly double-brooded this far north" and gave Early Thorn *Selenia dentaria* and Small Square-spot *Diarsia rubi* as examples. This may have been true at the time, but in the 17 years since the book was written, the distribution and behaviour of many species has altered dramatically. In the absence of any other contender, climatic warming is likely to be the main factor driving these changes.

Analysis of records

In Watsonian Yorkshire (Vice-counties 61 to 65), all moth records are collated and computerised using *MapMate* recording software. This has resulted in a database of almost half a million moth records being available for study. These are nearly all in the 25 years between 1980 and 2005 as many historical records have not yet been entered. Detailed flight-time histograms can now be produced, and these act as a useful aid in helping to decide whether moths are univoltine or bivoltine. By the end of 2005 we can safely say that at least 57 species of macro moth regularly caught in Yorkshire are now bivoltine every year, and a further 22 species may have a partial second brood in some years. This is a far cry from the situation in 1989. Many of these changes appear to be part of a long term trend and not just responses to unusually warm summers such as 2003.

The boundary between univoltine and bivoltine species is constantly moving and may be difficult to define or summarise. Information regarding flight season in commonly used field guides can be misleading. The data in Skinner (1984) is now

very out of date, and most people recording moths might use Waring and Townsend (2003). This new field guide although excellent in many respects, contains some arguable flight time data, some of which seems to be unchanged from that in Skinner. Phrases such as "double-brooded in southern England" or "two broods in southern Britain" are often used, but these geographical zones are not defined in the text and in most cases it is not clear where the south ends and the north begins.

The following species notes list the main examples where current flight times in Yorkshire contradict published sources. I have concentrated on macro moths as accurate flight time details on many of the microlepidoptera are fragmentary.

"W" refers to flight times as stated in Waring and Townsend

"Y" refers to the situation in Yorkshire

Geometridae

Birch Mocha *Cyclophora albipunctata* (Hufnagel)

W Two generations in the south, May/June and late July/August.

Y Not a common moth in Yorkshire and there are few sites where it occurs, but 23% of the total records occur in August/September and suggest a second brood.

Small Blood-vein *Scopula imitaria* (Hübner)

W Usually one generation July/August. Occasional small partial second generation in southern Britain September/October.

Y A second generation in Yorkshire most years from late August. Large in some years eg 35% of records in 2003.

Small Dusty Wave *Idaea seriata* (Schrank)

W Two generations in the south. One generation in the north.

Y Bivoltine every year, peaking in mid-July and late-September.

Riband Wave *Idaea aversata* (Linnaeus)

W Occasionally a partial second generation in the south, September/October.

Y Occasional September records in warm years are suggestive of a partial second brood.

Oblique Carpet *Orthonama vittata* (Borkhausen)

W Two generations in the south, one in the north.

Y Two clear, equal and widely separated broods.

Flame Carpet *Xanthorhoe designata* (Hufnagel)

W Two generations in the south, usually one in Scotland.

Y Clearly two broods each year.

Red Twin-spot Carpet *Xanthorhoe spadicearia* (Denis & Schiffermüller)

W Two generations in the southern half of England.

Y Always two well separated broods, the second much larger.

Dark-barred Twin-spot Carpet *Xanthorhoe ferrugata* (Clerck)
W Two generations in the southern half of England.
Y Again always two well separated broods, the second one much larger.

Small Phoenix *Ecliptopera silaceata* (Denis & Schiffermüller)
W Second generation occasional from Man northwards (NB the Isle of Man is at a similar latitude to North Yorkshire)
Y Always double-brooded in Yorkshire.

Green Carpet *Colostygia pectinataria* (Knoch)
W Two generations in southern England, one in northern Britain.
Y Double-brooded since 1997. Now a strong second brood each year.

Lime-speck Pug *Eupithecia centaureata* (Denis & Schiffermüller)
W Two overlapping generations in the south with a reduction in July. One generation in northern Britain.
Y A dip in records in July is suggestive of two overlapping generations.

Narrow-winged Pug *Eupithecia nanata* (Hübner)
W April to June with a partial second generation in southern Britain July/August.
Y May to August. Most records are July/August and suggest a strong second brood.

V-Pug *Chloroclystis v-ata* (Haworth)
W One generation in northern Britain
Y Bivoltine with a big second brood.

Yellow-barred Brindle *Acasis viretata* (Hübner)
W Two generations in southern Britain
Y Bivoltine. Second brood larger than the first.

Scorched Carpet *Ligdia adustata* (Denis & Schiffermüller)
W One generation in northern England and parts of Wales
Y Several late July to August records are highly suggestive of a second brood, although this is an uncommon moth in Yorkshire and more data is needed to be certain.

Peacock Moth *Macaria notata* (Linnaeus)
W Two generations in southern England, one generation elsewhere.
Y Again small numbers, but almost certainly bivoltine with most records occurring in August.

Purple Thorn *Selenia tetralunaria* (Hufnagel)
W One generation in northern Britain
Y Always bivoltine in April/May and July/August.

Engrailed *Ectropis bistortata* (Goeze)
W Two generations in southern Britain with occasional individuals of a partial third.
Y Bivoltine with a large second brood and a probable small third brood September/October.

Light Emerald *Campaea margaritata* (Linnaeus)
W Partial second generation in southern Britain and also recorded in Scotland.
Y Late moths first recorded in 1994 and now occur most years.

Notodontidae

Swallow Prominent *Pheosia tremula* (Clerck)
W One generation in northern Britain.
Y Bivoltine – usually overlapping broods.

Pale Prominent *Pterostoma palpina* (Clerck)
W One generation in northern Britain.
Y Bivoltine in May/June and a smaller generation in August.

Noctuidae

Flame Shoulder *Ochropleura plecta* (Linnaeus)
W One generation in northern Britain.
Y Bivoltine from 2000. 17% of records are now from the second brood.

Setaceous Hebrew Character *Xestia c-nigrum* (Linnaeus)
W One generation in northern England.
Y Regularly bivoltine since the early 1990s. The second brood now greatly outnumbers the first.

Nutmeg *Discestra trifolii* (Hufnagel)
W One generation from the Midlands northwards.
Y Always bivoltine with a big second brood in August.

Shears *Hada plebeja* (Linnaeus)
W A small second generation in August in the south.
Y August/September records in some years from 1996. A small but clear second brood – 3% of total records.

Cabbage Moth *Mamestra brassicae* (Linnaeus)
W In the north, probably only one generation.
Y Almost certainly two or three overlapping broods with records from April to October.

Bright-line Brown-eye *Lacanobia oleracea* (Linnaeus)
W A small second generation in southern Britain August/September.
Y A gradual increase in late records from the early 1990s onwards. A small bulge from mid August well into October indicative of a second brood comprising 3% of total records.

Broad-barred White *Hecatera bicolorata* (Hübner)
W Occasionally a small second generation in southern England in August.
Y 8% of records are in August and are highly suggestive of a partial second brood.

Campion *Hadena rivularis* (Fabricius)
W Two generations in southern England. One generation further north.
Y Bivoltine with overlapping broods.

Lychnis *Hadena bicruris* (Hufnagel)
W One generation from the Midlands northwards.
Y Now two large overlapping broods. Before 1990 the second generation was very small.

Common Wainscot *Mythimna pallens* (Linnaeus)
W One generation from the Midlands northwards.
Y Bivoltine. In the 1980s, second brood moths occurred in small numbers in some years. From 1994 a regular second brood has increased each year and from 2002 outnumbers the first brood.

Burnished Brass *Diachrysia chrysitis* (Linnaeus)
W A partial second generation in southern Britain.
Y Almost always bivoltine. Second generation comprising 10% of total records.

Gold Spot *Plusia festucae* (Linnaeus)
W Two generations in southern Britain (and occasionally in northern England)
Y Bivoltine with two overlapping broods; the second brood increasing every year is now much the larger, peaking at the end of August.

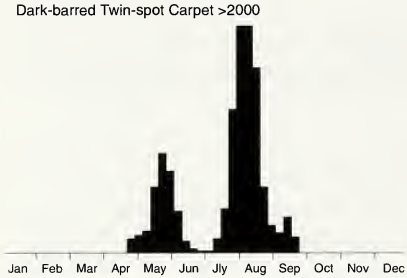
Straw Dot *Rivula sericealis* (Scopoli)
W June/July with a smaller second generation in southern Britain August/September.
Y Strongly double-brooded especially since 2003 when records became much more frequent; the second generation outnumbering the first. Records now until the end of October.

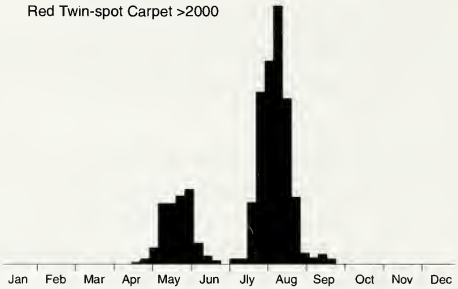
Snout *Hypena proboscidalis* (Linnaeus)
W One generation from the Midlands northwards.
Y Bivoltine from the early 1990s, the second generation now comprising 17% of total records.

Pinion-streaked Snout S*chrankia costaestrigalis* (Stephens)
W A partial second generation in southern England, late August – mid October.
Y A local moth in Yorkshire but the small number of records show a clear gap at the beginning of August and a large cluster of records in September. This strongly suggests a regular second brood.

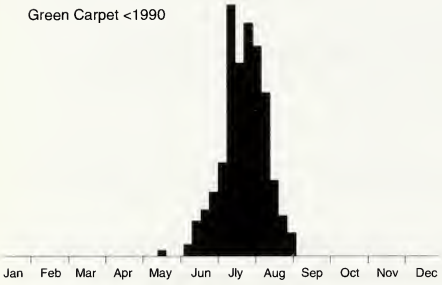
I have chosen the following histograms to illustrate some of the changes in flight times described above with comparisons before and after 2000, or in other cases comparing the situation before 1990 to records after 2000 in order to make the changes more clear.

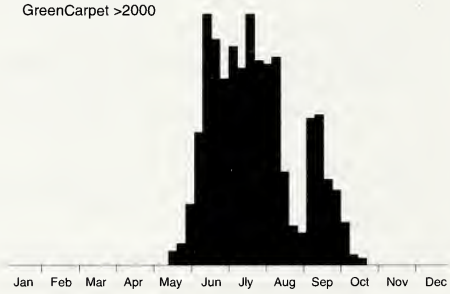
Red Twin-spot Carpet *Xanthorhoe spadicearia* and **Dark-barred Twin-spot Carpet** *Xanthorhoe ferrugata*: both species are clearly bivoltine in Yorkshire with well separated broods.



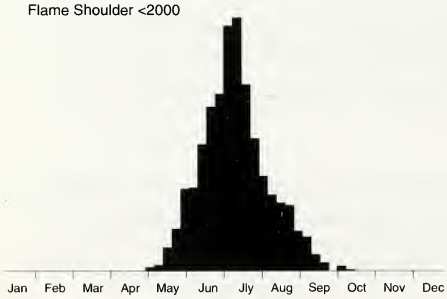


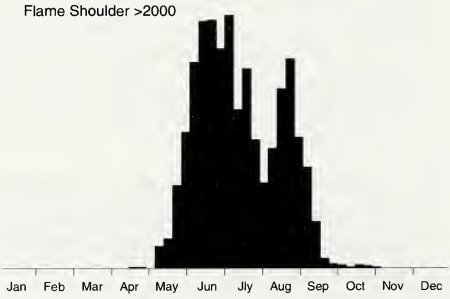
Green Carpet *Colostygia pectinataria*: univoltine before 1990 with a peak in late July and no hint of what was to come. After 2000, a significant number of moths are appearing in early June and producing a second generation in September.



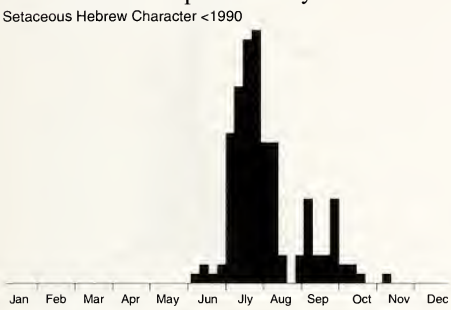


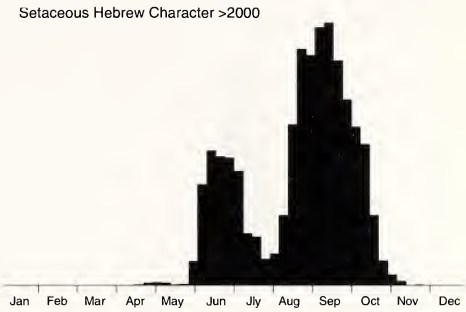
Flame Shoulder *Ochropleura plecta*: a dramatic change. Before 2000 a single brood peaking in early July with hardly a hint of a second brood. After 2000, the first brood peaks two weeks earlier in late June, and there is a significant second brood peaking in late August. An interesting scatter of even later records in October has occurred in the last few years.



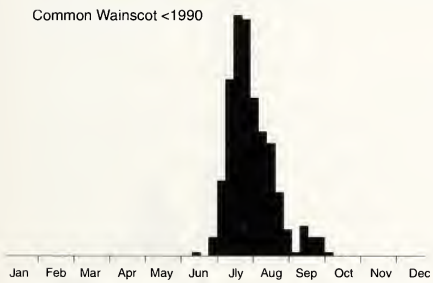


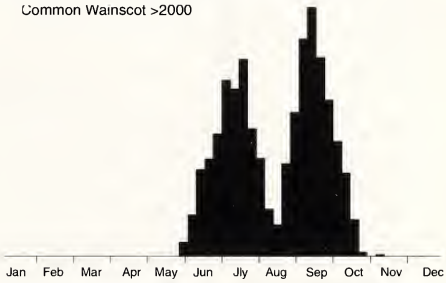
Setaceous Hebrew Character *Xestia c-nigrum*: records have gradually increased in Yorkshire as this moth has become much more common. Recent records show that the first brood now peaks earlier in June, and we now have a much larger second brood which continues to grow. There have also recently been some interesting early records in April and May.



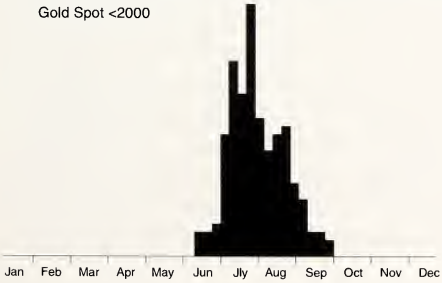


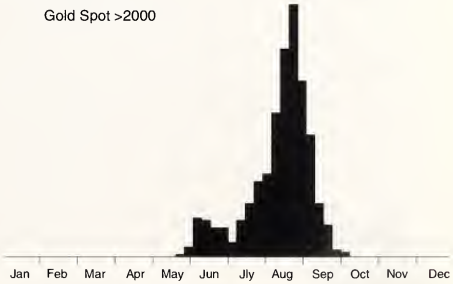
Common Wainscot *Mythimna pallens*: before 1990, a few scattered late records hinted of a second brood. Now the first brood peaks much earlier in late June/early July and there is a strong regular second brood outnumbering the first brood.



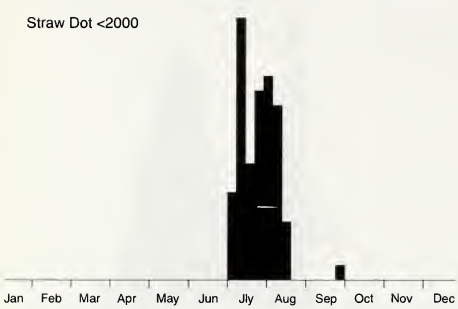


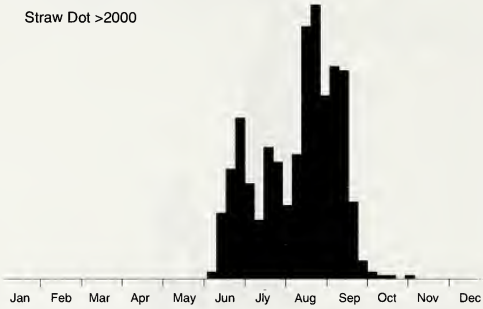
Gold Spot *Plusia festucae*: before 2000 the records suggest a single brood in most years in July and August, with a possible second brood in warmer years. After 2000 there is no doubt that the species has become bivoltine. A large second brood dwarfs the earlier June brood which looks correspondingly tiny in the illustration, though in fact the moth has become commoner in Yorkshire and recent June records are in fact greater in number than July/August records before 2000.



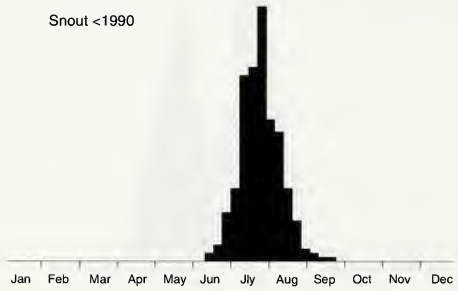


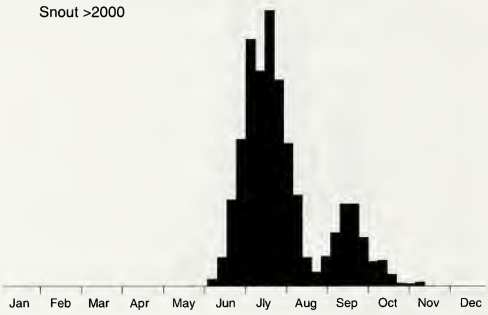
Straw Dot *Rivula sericealis*: this is another moth which has greatly increased in numbers and range in the county in the last few years. A single brood in July and August has now given way to two broods, the first in June/July and a larger second one in August/September with scattered late records now into November.





Snout *Hypena proboscidalis*: before 1990 a single brood peaking in late July. Since 2000, the first brood is perhaps a week or so earlier though the changes are slight. There is however a significant second brood in September with records extending into November.





Discussion

Yorkshiremen (and women!) generally do not take kindly to being called southerners and new moth recorders in Yorkshire may be puzzled that species which are clearly bivoltine here are said to be univoltine according to Waring and Townsend. Yorkshire is probably near the geographical centre of Britain, yet of the 18 commonly recorded species said to be bivoltine in "the south" or "the south of Britain", 16 have a clear second generation in Yorkshire every year; one (Tawny-barred Angle *Macaria liturata*) has had late individuals in recent years suggestive of a partial second brood, and only Common White Wave *Cabera pusaria* would seem to be always univoltine. By no stretch of the imagination can Yorkshire be said to be in southern England, yet of 23 common species said to be bivoltine in "the south of England", 11 have a clear second brood in Yorkshire, five are probably double

brooded in most years, and five more often have late individuals suggestive of a second brood. Only two species, Knot Grass *Acronicta rumicis* and Nut-tree Tussock *Colocasia coryli* so far have no evidence at all of any late moths. Many species are described as having partial or occasional second broods in southern England, and many of these show clear evidence of regular second broods in Yorkshire, for example Burnished Brass *Diachrysia chrysitis* and Small Blood-vein *Scopula imitaria* which have a small second brood almost every year.

Many of the examples above can be explained by inaccurate data being perpetuated in the published literature; for example there is little evidence that Nutmeg *Discestra trifolii* has ever been univoltine in Yorkshire. The majority of examples, however, seem to be part of a long term trend towards bivoltinism or indeed multivoltinism which has gathered pace in the run of warm summers of recent years. Many species are now beginning to show occasional late individuals and these are likely to represent the beginnings of a regular second brood which can only become more prominent as the pace of climatic change continues to accelerate. There are over twenty species which fit this pattern, and I strongly suspect that if the situation is revisited in another ten years, then moths such as Rivulet *Perizoma affinitata*, Poplar Hawk-moth *Laothoe populi*, Spectacle *Abrostola tripartita*, Light Emerald *Campaea margaritata*, Dark Arches *Apamea monoglypha,* Heart and Dart *Agrotis exclamationis* and many others will have become regularly bivoltine in Yorkshire.

Acknowledgements

I would like to thank the ever-growing numbers of moth recorders in Yorkshire for submitting their records to the county database over the years. Whilst records from one trap may seem to be of limited value on their own, the sum of so many records makes long term trends so much easier to analyse. I would also like to thank Mr Harry E Beaumont for his helpful comments and suggestions on the first draft of this paper.

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Late-flying specimens of *Pyla fusca* (Haw.) (Lep.: Pyralidae) in Hertfordshire

A single male *Pyla fusca* was caught in a Rothamsted Insect Survey light trap in Harpenden, Hertfordshire (trap number 594, O. S. grid reference TL 153133) on the night of 1 September 2005. This appears to be only the eighth record of the species to be caught in the county.

The species was first recorded in Hertfordshire in Bricket Wood, prior to 1902, by A. E. Gibbs and reported in the *Victoria County History*. It is likely that it was recorded in the 1880s, when Gibbs was active in that part of the county (C. W. Plant, pers. com.). Since then there have been very few reports: In 1962 there was an unconfirmed record from Watford by R. J. Penrose; R. I. Lorimer found a specimen in Totteridge in 1979; Borehamwood provided a singleton for E. S. Bradford on 12 June 1970; and B. Goater reported a specimen from Bushey on 25 June 1975. These records are all from the southern edge of Hertfordshire, adjacent to London, although this may reflect recorder bias as much as the distribution of the moth. There was then a 28 year period before the next specimen was discovered on 30 July 2003 by Mark Cooper at Cheshunt, in the south-east of the county. Finally, Andrew Wood reported an individual in Hertford on 28 September 2004.

The two most recent specimens are particularly interesting in that they were recorded in September, long after the species is usually considered to still be on the wing in this country. For the British Isles, Goater (1986. *British Pyralid Moths*. Harley Books) states that the species flies in June and July and this fits well with the earlier records. Later, Emmet, in his life-history chart (1991. *Moths and Butterflies of Great Britain and Ireland* **7(2)**. Harley Books), indicates that June, July and August are the months when adults may be found on the wing in Britain. Palm (1986. *Nordeuropas Pyralider, Danmarks Dyreliv* **3**. Bøger/Apollo), writing about the species in Denmark, also notes that it is known to still be on the wing until early August.

Interestingly, in central Europe it evidently flies from May until September (Slamka, 1997. *Die Zünslerartigen (Pyraloidea) Mitteleuropas*). In this region it is likely that the overall temperature may be slightly greater and warm weather may persist until later in the year than in Britain. It is therefore possible that the changing climate in the UK, and possibly elsewhere in northern Europe, is allowing this species to adapt to the longer season now available in this country, responding with either an extra generation or a lengthening of the flight season.

Many thanks to Colin Plant, the Hertfordshire and Middlesex Moth Recorder, for providing me with the details of past county records, and for other information. Thanks also to Mark Cooper and Andrew Wood for confirming the details of their records.— Philip J. L. Gould, Co-ordinator, Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

ARMYWORMS (DIP: SCIARIDAE) IN WEST SCOTLAND IN 2005

[1]J. C. A. Craik, [2]P. Wormell and [3]S. Austin

[1] *Scottish Association for Marine Science, Dunstaffnage, Oban, Argyll PA37 1QA.*

[2] *Hallival, Letterwalton, Oban, Argyll PA37 1SA.*

[3] *Scottish Natural Heritage, Glencruitten Road, Oban, Argyll PA34 4DN.*

Abstract

Two-hundred and three moving columns of larvae of *Sciara militaris* Nowacki (Dip.: Sciaridae) were observed at Barcaldine, Argyll, between 19 July and 6 August 2005, the second year of their appearance at this site. The longest column measured 398 cm and the greatest number of columns present at one time was 22. Estimates of the numbers of thousands of larvae present in four columns of different sizes were about 5, 8, 16 and 26; and the highest total present at any one time was about 110,000 – 220,000 larvae. Column fronts moved at 1-2 cm/min, but larvae on the upper surface of columns moved 3-4 times faster. Columns were most numerous in the mornings. Two unbroken rings of marching larvae were seen, one lasting for more than 24 hours. A few huge linear deposits of frass were found that must have been caused by intense synchronised defaecation by larvae in a column. Individual larvae measured during the study varied between 3 and 11 mm in length. From 20 July – 4 August, mean larval length increased from 6.3 to 8.4 mm and mean mass from 3.7 to 5.9 mg, although on any day there were large variations in both quantities between columns and between larvae. Possible reasons for column formation by these larvae are considered.

Introduction

At the end of July 2004, immense numbers of larvae of *Sciara militaris* Nowicki were found moving in closely-packed columns on a path in coniferous woodland at Barcaldine, near Oban, Scotland. These were believed to be the first occurrences in the British Isles both of this fly species and of the so-called "armyworm" phenomenon (Craik et al, 2005a, b). In July 2005, Jane Eaton and Tom Webster again found armyworms on the same path, 40 metres from the 2004 site. This had echoes of a similar finding 92 years earlier in Fayetteville, Arkansas, USA, where marching larval columns of *Sciara congregata* appeared at a particular site on 6 July 1912 and again on 16 July 1913 (Becker 1914). In 2005, columns were present almost daily at Barcaldine from 19 July to 6 August, providing better opportunities for study than in 2004. Here we describe some of our observations; more details, mainly biometrics, will be published elsewhere.

Observations in 2005

As in 2004, the columns were all on or alongside a five-metre-wide path running north-east to south-west through a Sitka spruce plantation. Despite daily searches, no columns were found more than three metres away from the path except for one column at seven metres. All were found along a 40-metre stretch of the path and most were on a 16-metre section of this stretch where the gap between the trees was greatest and daylight was stronger. Thus green vegetation was richer (see Craik et al 2005b for a list of plant species) and conifer needles were less abundant, forming a

sparse layer on the bare, compact soil of the trodden path itself. By contrast, few or no green plants grew more than about three metres off the path where the needles formed a dense layer many cm deep on soft spongy soil.

No columns were seen on 2 August, but otherwise columns were found on every day from 19 July to 6 August, their numbers varying between 22 on 23 July and two on 6 August. Altogether, 203 columns were observed and 195 of these were measured: 137 columns (70%) were up to 100 cm long; 35 (18%) were 101-200 cm; 16 (8%) were 201-300 cm; and seven (4%) were 301-400 cm. The longest column (398 cm) occurred on 27 July and the shortest (6 cm) on 30 July. Columns often varied considerably in width along their length. Many tapered strongly towards the rear, often ending in a chain of single larvae touching head to tail. Similarly, the height (due to larvae being stacked vertically) varied considerably along a column.

The extraordinary spectacle of huge numbers of small larvae on the move sometimes led us and other onlookers to speculate that there must have been "millions". We estimated the actual numbers in each of four columns as follows. A small part of each column was collected, taken to a laboratory, weighed to the nearest milligram and counted. At the site, most or all of the column was weighed to the nearest gram and replaced on the ground (the larvae then usually re-organised themselves into a column within 30 minutes). The number in the whole column was obtained by proportion. In this way, a 200cm column was estimated to contain 13,320-19,980 larvae. Another column of *c.*50cm held *c.*4,920 larvae. A strongly tapering column comprising a body 65cm long and a thinner tail of 40cm contained *c.*8,000 larvae. A large column 218cm long, including a branch of 34cm, and of fairly uniform thickness held *c.*25,900 larvae.

Allowing for variations in thickness, it was concluded that the largest columns seen were unlikely to have contained more than 40,000 larvae. Moreover, most columns were short (<100cm) and usually thin. Allowing an average of 6,000 – 12,000 per metre, the total in the 22 columns on 23 July (1,830 cm in total, the most seen at any one time) was likely to have been in the range of 110,000- 220,000 larvae. Our initial reaction of "millions" was an enthusiastic overestimate.

The speed of forward movement of a column front relative to the ground was 1.8 cm/min (average of five columns). However, larvae on the upper surface of a column were moving at 6 to 8cm/min relative to the ground (averages of seven measurements on two columns). Thus, larvae riding on the back of a column travelled three or four times faster than the column front.

The path was almost level along its length, but sloped at about 10 degrees across its width. Of 125 records, columns were moving downslope on 69 occasions (55%), upslope on 29 (23%) and level on 27 (22%). Thus more than twice as many columns were found moving downslope as moving upslope, possibly because movement was partly gravity-driven in the direction of least resistance. Columns moved without difficulty up or down steep (70-80°) slopes for distances of several tens of centimetres, for example into or out of a drainage ditch that ran along one side of the path. Columns were markedly more numerous during the middle to late morning (09.00-13.00 hours) than later in the day or at nightfall, although no observations

were made later at night or around dawn. Although the lifetimes of individual columns were not recorded, we gained the impression that they usually lasted a few hours at most (except for the ring described below). Columns were often seen coming out of the ground, disappearing into holes, or dispersing as larvae sank into the litter layer or soil. Columns were always in a state of change, sometimes varying in width or length from minute to minute, and commonly forking at the front or forming temporary side-branches. Some columns were seen to meet and unite, others to split into two by a fork or side-branch breaking off or by a break in the main trunk. Once an "X" formed when two columns touched laterally.

On two occasions we found unbroken rings of marching larvae. One of these was approximately circular with diameter of only about 4cm and, 35 minutes after it was first seen, it had degenerated into a chaotic mass that soon dispersed. Much more striking was a large ring, diameter 48-54cm, containing several thousand circling larvae. This was discovered at 09.55 hours on 27 July and the larvae were still circling when we left at noon. At 09.30 next day, the larvae were still in a ring, diameter 40-66cm, its centre shifted by about 90 cm from the previous day. The larvae, presumably the same ones, were still circling, but noticeably more slowly, and by 11.30 they had all dispersed and disappeared into the litter layer and vegetation. Thus the marching ring appears to have persisted for over 24 hours.

Through a magnifying glass, the movement of the massed larvae was mesmerisingly beautiful. They seemed to swim gracefully on and in a stream made

Plate F. Streamlined appearance of column of larvae.

up entirely of their own kind. They gave the impression of a continuous liquid flow, yet no free liquid was visible. Individuals moved forward by repeated longitudinal contraction and lengthening, each remaining in a straight line, and the many parallel bodies gave a streamlined appearance to the column (**Plate F**). The rhythm seemed not to be synchronised between larvae and there was no suggestion of writhing or of transverse waves along the larval body. Larvae at the front of a column behaved differently, constantly questing by pointing their heads left to right and up and down. This streamlined, apparently steady and purposeful movement occurred when the larvae were on dry leaf (needle) litter or dry compact soil. However, some substrates provoked a very different behaviour. Arriving at a patch of wet mud, those at the front sometimes stopped moving forward and a "pile-up" occurred. The column lost its streamlining and appeared as a chaotic mass (**Plate G**). Larvae moved in all directions until a new purpose was established and the column reformed and moved on, sometimes over the mud, sometimes over leaf litter. In similar fashion, columns encountered and circumvented fir-cones, stones and other obstacles (**Plate H**). Columns usually refused to move onto dry paper or onto a finger. Weighing of all or part of a column became possible when it was found that the larvae moved more readily onto moist paper.

Close-up photographs of larvae showed that the intestinal tract was often full of dark-coloured food remains. These appeared to be surrounded by clear yellow-brown liquid, possibly digestive fluid (**Plate I**). At other times, only a few dark flocculent food remains were visible suspended in the fluid, and occasionally no food remains were visible and the yellow-brown liquid seemed to fill much of the body. The larvae were moist to the touch, but no visible fluid or slime remained on the fingers and usually the columns left little or no visible residue on the ground. Once or twice the vegetation became discoloured by a buff or yellowish stain. Much more strikingly, huge quantities of black frass (faeces) were found on four occasions. One of these frass trails was 70 cm long (**Plate J**). Both the yellow deposit and the frass were on short stretches of trail along otherwise clean routes, implying that occasional short but intense bouts of synchronised defaecation had occurred. Although the defaecation itself was not seen, the deposits suggested a similarly brief and intense episode of feeding that caused rapid turnover of gut contents, possibly after an abundant food source had been encountered by the moving column.

The longest individual larvae were 11mm and the shortest were 3mm. The mean length of larvae, combined from several columns each day, increased from 6.3mm on 20 July to 8.4mm on 4 August. Likewise, mean mass increased from 3.7mg on 21 July to 5.9mg on 4 August. These increases show that larvae were growing for most of the time when columns were present, implying that they were feeding. However, there were large differences in the sizes of the larvae on any particular day, both within and particularly between columns. There was also great variation in thickness of larvae of the same length, some being very fat, others thin. This may have been sexual, as freshly emerged egg-bearing females are larger and fatter than males.

Although the larvae in the columns were exposed and apparently vulnerable, no predators were seen to approach them. However, few birds occur near the ground in

these dense plantations of alien conifers. We saw only two birds during at least 50 hours of observation, a juvenile robin on 9 August and a female blackbird on 10 August – both of them after the columns had ceased to appear.

Temperatures on the ground surface, measured close to the columns, varied between 11.1°C and 13.5°C. Relative humidity on the ground was usually in the range 91-95%, but it was 80-89% on 29-31 July after 10-12 days without rain, and 97-98% on 3 and 4 August after heavy rain.

Throughout the period when columns were present, small flies were seen apparently following and occasionally settling beside the moving larvae. Some were caught and have still to be identified, although they are not thought to be sciarids. Larvae reared in captivity emerged between 14 and 18 August, so adults would have been expected in the wild at about that time. Sweeping with a net was carried out between 10 and 20 August over the full area where columns had appeared. Although a few adult Diptera and hymenopterous parasitoids were caught (still to be identified), not a single adult *Sciara* was encountered. An MV moth trap was run at the site for one night during this period, but it too failed to catch any *Sciara*. These failures are perhaps explained by the remarkable reluctance of the adults to fly; indeed, many or most of those reared in captivity never flew, some of them mating before dying without ever taking to the wing. If adults in the wild are similarly reluctant to fly, it might explain why larvae were found in almost exactly the same place in both 2004 and 2005.

Captive rearing in 2005

Larvae collected on 22 and 27 July were reared in spruce needle mould collected at the site as described previously (Craik et al, 2004b). Pupation of the two batches occurred on 5 and 10 August and most flies emerged on 14-15 and 17-18 August. As before, some larvae died around the time of pupation and, when fungal growth appeared, pupae were cleaned of mycelia and placed in clean boxes on moist tissue paper, the second batch also with clean needle mould.

When a box containing recently-emerged flies was opened, the jarring movement sometimes caused one or two to fly and escape, but most remained settled. Provided the tissue paper in the box was kept slightly moist, adults of both sexes showed no tendency to fly even when the lid was off, so that their behaviour could be observed. They were easily made to crawl onto pieces of moss or bark without taking flight.

Among those that emerged, females outnumbered males by about 10:1. Sometimes, both sexes were seen to flick their wings as though about to take flight. This may have been a form of sexual signalling, although neither sex was seen to respond to nearby wing-flicking. Sometimes a male was seen to mate with several gravid females in rapid succession, each mating lasting 5-20 seconds. Emergence of the second batch provided a much greater number of flies than the first. Gravid females, along with a smaller number of males, spent most of 17 August crawling over and into the small heap of moist needle litter. Many females deposited eggs (presumably after mating, although it was not established that mating always

Plate G. Front of column that has encountered a patch of wet mud (left), showing change in behaviour of larvae.

Plate H. Column of larvae that has encountered and gone around a spruce cone.

Plate I. Close-up of larvae showing dark contents of intestinal tract surrounded by yellow fluid.

Plate J. Part of a 70 cm trail of frass (pencil 17cm).

preceded egg-laying). On 18 August, many spent females and several males were dead or dying, scattered over the moist tissue. A few more gravid females emerged on 19 August. Thirty voucher specimens, including both sexes, along with some batches of eggs were preserved. All four stages of the life cycle have now been retained in PW's collection. Six adults, including both sexes, are with the Royal Scottish Museum, Edinburgh.

Discussion

Some possible reasons for column formation by sciarid larvae were considered by Menzel & Mohrig (2000). These included the search for food or a suitable feeding-place, the search for a site for pupation, the avoidance of desiccation, and the quest for *Lebensraum* resulting from the growth of large numbers of larvae in a small space. None of our observations provides a conclusive explanation of this remarkable behaviour, but some of them point to a possible connection with food and feeding. The increases in body mass and length show that the larvae must have been feeding throughout the period when columns occurred, although it is not clear whether feeding took place when larvae were hidden in the leaf litter or when they were moving as columns. Each column behaves much as if it is a single super-organism and one may speculate that it is a means of mass nutrition, picking up and distributing food along its length. Possibly this food is particulate, possibly some is digested by external secretions and dissolved into a thin film of nutritious liquid that both feeds larvae throughout the column and lubricates their movement. This might explain why the gut contained clear brown fluid at some times and solid food at others, and also why the moving larvae adhered so closely to the column. Moreover, the massive linear deposits of frass seem to imply that brief but intense feeding occurred whilst the columns were moving. Finally, most columns were on that part of the path where sunlight was strongest and un-decomposed vegetable food would have been most abundant.

Whatever the explanation, we were drawn back every day not just to study, but simply to watch an amazing spectacle. We hope that others will look out for larval columns elsewhere in the British Isles, particularly in late July and early August, as it seems unlikely that they should be confined to this one site. The movement of the larvae is not obvious and, on first sight, columns can be mistaken for discarded plastic waste or the cast skins of snakes.

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A SIGNIFICANT INTERCEPTION OF THE GREEN VEGETABLE BUG, *NEZARA VIRIDULA* (LINNAEUS) (HEMIPTERA: PENTATOMIDAE) IN THE UK

SHARON REID

Central Science Laboratory, Sand Hutton, York YO41 1LZ. (e-mail: s.reid@csl.gov.uk)

Abstract

The green vegetable bug, *Nezara viridula*, is an important agricultural pest and is expanding its geographical range northward in Europe. In February 2005, 132 adults were intercepted at a nursery in Devon on terracotta pots imported from Italy. The potential for this interception to have established a breeding colony, and the risk to protected agriculture in the UK is discussed.

Introduction

Nezara viridula (L.), commonly known as the Green Vegetable Bug or the Southern Green Stinkbug, is regularly intercepted in the UK by the plant quarantine service on a wide range of imported plants and produce. The Central Science Laboratory (CSL) has recorded twenty interceptions of *N. viridula* since 1930, with Italy as the most recurrent country of origin. This widespread species is known as one of the most important agricultural pests in the world (Meglic *et al.*, 2001) and is of considerable ecological and agricultural interest as it is highly polyphagous, feeding on plant species in more than thirty families, with a preference for legumes and brassicas (Panizzi, 1997). In the absence of control measures it is a major pest of soya beans, cereals, cocoa, macadamia and pecans, as well as a minor pest of a wide range of fruit and vegetable crops (CABI, 2004). In temperate climates, the shieldbug overwinters as an adult in diapause, hiding in locations that give protection from cold weather such as under leaf litter, bark, or any object that offers protection (Todd, 1989).

Interceptions of *N. viridula* on imported plants or produce usually consist of one or two adults. However, on the 3 February 2005, a total of 132 live adult *N. viridula* were intercepted at a fruit farm and nursery near Barnstaple, Devon, by the Plant Health and Seeds Inspectorate of the Department for Environment, Food and Rural Affairs (Defra). The shieldbugs arrived among a consignment of terracotta pots received directly from the manufacturer in Rovigo, Italy (50 miles south of Venice). The shieldbugs were identified by CSL, and found to have an almost 1:1 male to female ratio and five distinct colour morphs, though the majority were of the reddish-brown (russet) type (**PLATE K**). Winter mortality is one of the major limiting factors of *N. viridula* populations worldwide, and overwintering survival is reportedly greater for females than males, and for those with the russet coloration (Todd, 1989). Due to the high number of individuals present, and the fact that Devon with its mild climate is further south than the northern limits of its worldwide distribution, it is likely that a small colony would have had the potential to survive the winter and establish an outdoor breeding population the following summer had the discovery not been made.

Changes in geographical distribution driven by climatic change, such as northward expanses in range have been documented in many insect species. *Nezara viridula* provides a good example; in Europe its range has spread as far north as Northern France, and into Germany, Hungary and Slovenia (CABI, 2004; Rédei & Torma, 2003; Virant-Doberlet *et al*, 2000). Isolated populations have also been present in Southern Russia (CABI, 2004; Shtakelberg, 1949). It has also expanded its range northwards in Japan and reached Osaka following average temperature increases recorded in the region (Musolin & Numata, 2003). As a strong flier it has undoubtedly utilised wind and weather frontal systems, as well as the lanes of commerce to expand its range (Todd, 1989). The shieldbug's spread in South America is related to the increased acreage for soya bean production (Panizzi *et al*, 2000). As cropping patterns of susceptible cultivated plants change in Europe, it is likely that *N. viridula* will further expand its distribution.

Plate K. Five colour morphs of *Nezara viridula* (L.) from Rovigo, Italy; a Plant Health and Seeds Inspectorate sample identified by the Central Science Laboratory (image Crown Copyright courtesy of CSL).

Potential for colonization of Britain

Three outdoor breeding colonies of *N. viridula* were discovered in the UK in the summer of 2003 (Barclay, 2003; Shardlow & Taylor, 2004). Should isolated populations such as these continue to reproduce successfully, and further stowaways such as the large number intercepted in Devon arrive undetected, would *N. viridula* have the potential to establish itself as an economically important plant pest in the UK?

Two of the UK populations discovered breeding in London were feeding on unripe tomatoes outdoors (Barclay, 2003). The shieldbug is a major pest of tomatoes in parts of North America, where its feeding punctures retard the growth of the fruit and significantly lower its market value, and also provide a route for fungal and bacterial infections (Sikora, 2000). The expansion in range of this pest in Europe is presumably related in part to its association with a number of greenhouse crops (Clercq *et al.*, 2002). Therefore it is possible that glasshouses in the UK could provide a suitable climate for eggs or gravid females that may be accidentally introduced, and tomatoes, cucurbits and cruciferous crops could be among the crops most at risk.

Voucher specimens of the *N. viridula* population from Devon have been deposited at CSL, the Natural History Museum, London, and Manchester Museum.

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Some interesting moths seen in Devon during 2004 and 2005

Pyralidae

Evergestis limbata L.

A specimen of this species was taken at light by Mr. B. King on 15 July 2004 at Kingsteignton. This is the first record for Devon. Two more specimens were taken at light during 2005 — *Teignmouth, 25 June (RFMcC) and *Kingsteignton, 13 July (B. King).

Anania verbascalis D. & S.

A specimen of this species was captured at light by Mr.I. Lakin at *Lincombe, Sidmouth, 25 July 2005. This is the first confirmed record for Devon.Beirne (1954. *British Pyralid and Plume Moths*), gives "Devon", but the source cannot be traced.

Psammotis pulveralis Hb.

A specimen of this species was taken at light, *Uplyme, near Lyme Regis on 8 August 2004 by O. Woodland and is the first record for Devon.

Conobathra tumidana D. & S.

A specimen of this species was seen at light and photographed on 11 July 2005 at Plymouth, Crownhill by Mr. J. L.Beswetherick. A copy of the photograph has been seen by me and represents the first confirmed record for Devon. A second example was taken at light at *Teignmouth, on 20 July 2005 by myself. There have been vague references to Devon records of this species in the past: Meyrick (1927.) says "Kent to Devon, Suffolk local. Paignton, 30.vi.1932, P. P. Millman", but Stidston (1958. *Rep. Trans. Devon Ass. Advmt Sci.* **90**: 208), gives "Devon (Meyrick); Paignton (doubtful)".Skinner (*Ent. Rec.* **107**:241-243) in his reveiw of British records of this species in makes no mention of any specimen from Devon.

Geometridae

Idaea trigeminata Haw.

A specimen of this species was taken at light by B. King ON 23 June 2005 at *Kingsteignton. Down through the ages, this species has been recorded by generations of lepidopterists; Parfitt, E. (1878. The Fauna of Devon, Lepidoptera. *Rep. Trans. Devon Assoc. Advmt. Sci.* **10**: 412-588) through to Stidston (1952. *Lepidoptera of Devon*) have mentioned it, but the Victoria County History, published in 1906, considers that " ... *this has been recorded in error in some cases for a variety of the last species* [*I.dimidiata* Single-dotted Wave]". During the 1960s, Lees gives "Maidencombe, odd specimens" but there are no dates in the Devonshire Association Record books and no specimens in his collection at The Royal Albert Memorial Museum, Exeter]. A. H. Dobson, Devonshire Association Macrolepidoptera recorder from 1963 – 1970, says of a record from Torquay [Maidencombe is part of the Torquay area] "I believe this to be an error. Dark banded forms of *biselata* [Small Fan-footed Wave] are common, but I have never found a single specimen of *trigeminata* [Treble Brown-spot] since

collecting there". There have been several records from 1980 to 1995 with, as far as I know, no vouchers being taken. Since I have been living in Devon from 1993, I have never seen a specimen of this species in Devon until now and I consider that errors of identification have been made.

Cydophora pendularia Cl.

A specimen of this species was taken at light in the *Hatherleigh area by Mr. K Wolton on 17 June 2005. The VCH (1906) says "Recorded at Tiverton by Mr. C. M. Major" [should be C. M. Mayor]. Stidston, (1952. *op. cit.*) says "Rare" and repeats the *VCH* record before continuing with "1906, Aug., Lincombe Drive, Torquay, J. Walker". This record is regarded as suspect in the DA Record Book]. More rerecntly there are records from Chudleigh Clay Pits – one in 1933, two larvae in 1935 and one on 13 May 1936 (C. Q. Parsons). The current specimen is the first since the 1930s.

Thera cupressata Geyer

This species has been seen on a regular basis at the Dawlish site since the first Devon record there at lighton 23 November 1999 by P. Franghiadi (*Ent. Rec.* **112**: 106 and *Rep. Trans. Devon Ass. Advmt Sci.* **132**: 343). One was taken by C. Hart at Branscombe on 14 June 2003 and the moth can now be found at Ilsham Marine Drive, Torquay; specimens seen from 2004, with larvae being beaten from the "Cupressus" trees at Thatcher Point, Torquay in May 2005 (B. Henwood). One was taken by myself at *Holcombe on 24 June 2005, a new site although this could have been a vagrant from the Torquay area.

Noctuidae

Euxoa crassa Hb.

A specimen of this species was taken at light at *Uplyme, near Lyme Regis on 8 August 2004 by O. Woodland. This is the first Devon record. A further specimen was captured at light at *Ilsham Marine Drive, Torquay on 10 August 2005 by B. Deakins.

Dryobota labecula Esp.

A specimen of this species was taken at Holcombe, near Teignmouth on 9 December. 2005; the first warm night for a couple of weeks. This is the first record for Devon and the specimen was exhibited at the Devonshire Association Meeting on 28 January 2006.

Catocala nymphagoga Esp.

The first record for Devon of this species was taken at light at *Holcombe, 26 August 2005, by myself and is also the fourth British record (previous reords being Tregaron, Cardiganshire, 28 July 1982, New Forest, Hampshire, 31 July 1982 and Central London, 4 September 2002.

Specimens indicated with an asterisk (*) are in my own collection.— Roy McCormick, 36 Paradise Road, Teignmouth, Devon TQ14 8NR.

***Peribatodes rhomboidaria* (D. & S.)(Lep.: Geometridae): changes in appearance time and polymorphism in north-west Kent**

Barrett (1902. *The Lepidoptera of the British Islands*, **VII**), writes that this moth "is on the wing in July and August, sometimes at the end of June, and occasionally specimens of a second generation of smaller size are found in September". Plant (1993. *The Larger Moths of the London Area*. LNHS) presents a similar description, but with one significant difference — no indication that these later specimens are of smaller size.

My garden mv light at Dartford has shown that the moth was not common here during the 1970s, annual sightings being restricted to single figures. However, for the 1980s they averaged 40, for the 1990s, 61 and for the five years 2001 to 2005 the figure had risen to 95.

A. A. Allen was the first person, I believe, to comment in this Journal on early June sightings, and this for south-east London. My records confirm this trend; for the first half of June my initial records were for the 12 and 14 June 1989, and over the past fifteen years it has become the norm to encounter the moth in early June. In 2002, the first specimen was noted on 31 May; another appeared on 30 May 2004, while in 2005 the first sighting was a month earlier, on 30 April, followed by further specimens on 20, 25, 26, 27 and 30 May after a spell of arctic weather lasting from 7 to 17 May, during which time the mv light was not in use.

Thus there has been an advance in time of appearance from about 1997, from "July, sometimes late June" to early June, perhaps to be amended shortly to late May. However, there has not been a reciprocal advance in emergence time towards end of season; on the contrary the season has tended to lengthen to include the first half of September, and occasionally specimens are encountered in the Autumn.

Over a period of thirty-six years my garden mv light records show that August sightings of *P. rhomboidaria* have exceeded those of July in a ratio of about 4:1. In only three years August was not the predominant month: in 2004 June produced the most sightings, whereas in 1998 September had produced most, and in 2005 June, August and September all eclipsed July to relegate it to fourth position. In recent years, July sightings have declined relatively causing a trend for July to be removed from second place, its traditional position throughout the second half of the twentieth century, by June or September, or even both, one result of the extended season of appearance. However, it appears that the traditional régime, and the recent changes, do not necessarily apply throughout south-east England as might be expected. Collins (1997. *The Larger Moths of Surrey*) for the 1980s and 1990s has noted that in that county generally, *P. rhomboidaria* flies from June to September with peaks in June and September suggesting a bivoltine régime. For north-west Kent, the profile suggests a single generation for these decades and earlier. Additionally for this period there was an absence of ab. *minor* Fuchs, the first specimen of which was noted on 11 September 2002 in sequence following on from August, and followed by several normal sized specimens, the latest being on 1 October. Further ab. *minor* were note in late august and September in the three following years along with a

larger number of normal sized specimens, suggesting a dimorphic second generation. However, this assessment must now be amended, for a specimen of ab. *minor* was noted on 14 June 2005 (first generation) followed by two others (14 and 18 June 2005). Nevertheless, it would seem that these small specimens are confined mainly to the second generation, and are in the minority and frequently absent.

Although *P. rhomboidaria* now appears to be fully bivoltine in this part of north-west Kent, and perhaps to give occasionally at least a partial second generation in the last decade of the 20th century, no distinct gap has ever appeared between the two supposed broods, although invariably in July sighting have dwindled considerably. The earlier moths are indistinguishable from the later ones by ground colour, markings and size, excepting the occasional ab. *minor* which seems to be mainly restricted to the later sightings. This contrasts with bivoltine species such as *Selenia dentaria* (Fabr.), *S. tetralunaria* (Hufn.) and *Ectropis bistortata* (Goeze) in which the two generations are well separated by several weeks and are characterized by moths different in appearance, including size.

Breeding a species in captivity can be a valuable aid in determining voltinism in which the two supposed generations are not separated from each other, and it is preferable to do this under as near natural conditions as possible. However, *P. rhomboidaria* presents a serious problem in that females are rarely attracted to light. However, in 1980 a female was so obtained and the very young larvae kept indoors in an unheated room went into hibernation until late April, being fed on privet *Ligustrum ovalifolium* and the resulting dozens of moths emerged in July 1984. Quite a number of larvae became casualties on coming out of hibernation. The moths were particularly interesting, comprising roughly equal numbers of ab. *nigra* Adkin and ab. *perfumaria* Newman; of these latter specimens several were considerably darker than the normal slate grey, appearing somewhat intermediate between the two aberrations. Unfortunately no eggs were obtained from this small brood.

On 21 August 2005, after my garden light had attracted almost 1,500 more *rhomboidaria* since 1984, another female arrived, but in very worn condition. A few eggs were obtained from which about a dozen moths were bred in November, all ab. *perfumaria*. The young larvae were kept in plastic containers and fed on privet in an unheated room until almost full grown, when the room was heated by day only. Pupation took place on the paper lining the floor of the containers; no attempt was made to construct a cocoon.

The profile of sightings for 2005 strongly suggests a bivoltine regime with the first generation in May and especially June the stronger, the second showing September having slightly more sightings than August, and several in October. By contrast, of the 160 specimens recorded for 2005, only seven were noted in July, just one more than for October. None of the larvae of this presumably third generation showed inclination to hibernate, in contrast with those in 1983. Several females of this brood laid eggs. She very young larvae exhibited slow growth and no attempt to hibernate was observed. To date, in early April, several moths have emerged, but the bulk of the brood are still larvae.

Thus it appears that a series of exceptionally mild autumns and winters in north-west Kent may have initiated a change in this species from having a univoltine to a bivoltine life cycle, based upon the overwintering larvae no longer going into hibernation. Unfortunately the female obtained on 21 August was probably of a second generation, so good circumstantial evidence has yet to be confirmed regarding the exact nature of the two maxima of incidence divided by a month with continued sparse, scattered sightings. A change in voltinism occurred in *Campaea margaritata* (L.) in northwest Kent in the late twentieth century, but with a distinct hiatus of several weeks and a difference in appearance between the two generations.

The accompanying graphs illustrate the development of bivoltinism in *rhomboidaria* at Dartford from observations of garden mv light records in three five year periods on a tripartite basis. Figure 1 shows the typical univoltine life cycle of the period 1981-1985 characteristic throughout the 20th century until about 1995, the lengthening forwards of the time of appearance of the moth in the period 1991-1995 to include June and the apparent change to a bivoltine regime in 2001-2005, with a significant increase in June records and even some for May, a disproportionate increase in sightings for September and October giving an extended time of appearance for the moth, and the significant incomplete July hiatus.

The predominant form in north-west Kent is ab. *perfumaria* Mewman; not until 1998 did I encounter the typical form in the region, and I have seen several since. In addition there has been an extreme melanic, declining in frequency since the 1960s. This is ab. *nigra* Adkin (= *nigerrima* Moreau). These melanics are black with a yellowish postmedian line originating on the dorsum of the fore wing and proceeding obliquely forward to fade out before reaching the costa, and sometimes a similar sub-basal line. These lines are usually conspicuous on fresh specimens, but are somewhat fugitive and less in evidence on old cabinet ones. Its highest incidence since my garden mv light was first operated in 1969 was 38% in 1981 (n = 44), followed by 25% in 1978 (n = 31) and 23% in 1985 (n = 55). There has been considerable confusion regarding the identity of these extreme melanics in Britain, and it persists to-day. An extreme melanic found on the Continent, but not in Britain, was described by Aigner, originally in Hungarian, as ab. *rebeli* in 1905. The description is clear – black, with a pale wavy sub-terminal line on the fore wing. British specimens do not possess a pale wavy sub-terminal line, but they do have, almost always, the yellowish transverse lines. In the early 1930s, C. B. Williams in his studies into the genetics of the extreme melanics of *P. rhomboidaria* from Britain referred to them as ab. *rebeli* Aigner, and the misappropriation of this name has continued until to-day in Britain. However, in the National (RCK) Collection the specimens are labelled ab. *nigra* Adkin and this is the name used by Chalmers-Hunt (Butterflies and Moths of Kent, *Supl. Ent. Rec.* **1960-1981**).

Adkin (*Proc. S. Lond. Nat. Hist. Soc.* **1908-9**: 85) exhibited a series of extreme melanics of *P. rhomboidaria* from Norwich and West Kent and commented that in general he was not in favour of the naming of aberrations, but nevertheless considered that the specimens might be called ab. *nigra*. He described them as being

uniformly black, omitting mention of the yellowish striae present on almost, if not all, the specimens. Adkin also omitted to allocate a type specimen and paratypes, and there were no accompanying illustrations of the specimens exhibited.

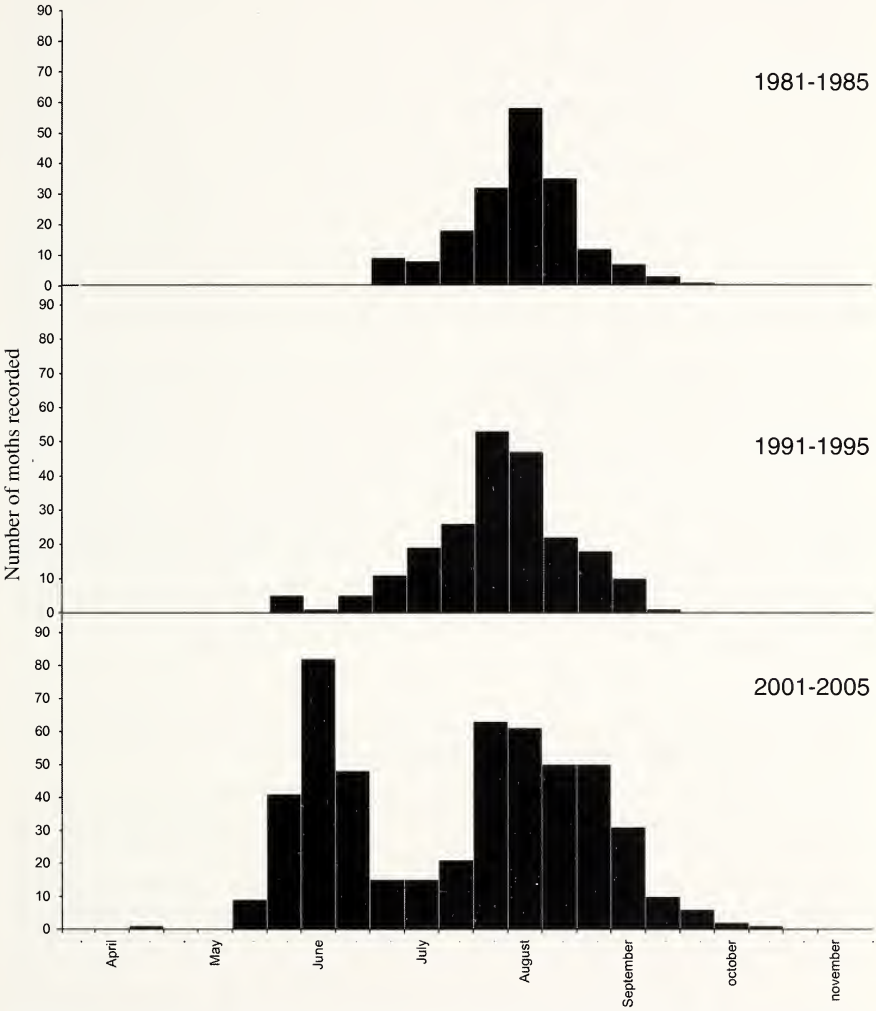

Figure 1. Number of *Peribatodes rhomboidaria* at mv light at Dartford, Kent in five-year periods.

In France, Moreau (1916. *Bull. Soc. Ent, Fr.*: 188 & Plate 1, fl. 4) accurately described and illustrated some French specimens which are identical with the British, which he named ab. *nigerrima*; this appears to be the legitimate name and

should have received universal accord to make Cockayne's intervention unnecessary. However, Cockayne (1953. *Ent. Rec.* **65**: 193) commenting on the continued use in Britain of the name *rebeli* intervened to add legitimacy to Adkin's inaccurate description by allocating one of Adkin's series known to have been exhibited, as a lectotype, a male specimen from Dartford, 12 August 1908. A curious result of the confusion of nomenclature occurs in Seitz in which a figure of *nigra* is labelled *rebeli*, but its accompanying description is based on *nigra*. French textbooks not surprisingly refer to these melanics with their yellowish striae as *nigerrima* Moreau, which I favour, but I consider Adkin's *nigra* is now acceptable, being used by the British Museum (Natural History), presumably as the name predates that of Moreau.

Although Cockayne's intervention may have added some legitimacy to Adkin's *nigra*, the extreme melanics he exhibited in 1908 still remain without adequate description and in fact were somewhat variable. Such variability has been studied and divided into several sub-varieties by Lenek (1951. *Ent. Nachr. blatt* **3**:122). Uniformly black specimens, devoid of markings, are named ab. *orcus* Lenek. Chalmers-Hunt (*op. cit.*) notes several bred specimens from Dartford in 1912, 1913 and 1914 in the National (RCK) Collection. However, despite carefully examining all extreme melanics visiting my garden mv light, only one ab. *orcus* has been identified (13 June 2005), suggesting it is quite rare here. This specimen would appear to be the first wild ab. *orcus* to be recorded for Kent.

Extreme melanic forms of this species in north-west Kent have now declined from 25% for the five years 1981-1985, then already being in decline, to 3.5% for the period 2001-2005, being as low as 1.8% in 2005 (n = 160). However, ab. *perfumaria* remains the prevailing form, and typical *rhomboidaria* remain of casual occurrence.— B. K. West, 56 Briar Road, Dartford, Kent DA5 2HN.

Progress in the study of the ecology and management of the Marsh Moth *Athetis pallustris* (Hbn.) (Lep.: Noctuidae) by monitoring of larvae

On 25 September 2005, forty final instar caterpillars of the Marsh Moth *Athetis pallustris* were found at the Saltfleetby-Theddlethorpe Dunes NNR on the Lincolnshire coast. Monitoring of larval populations has taken place here almost annually since 1989, using a technique of making small piles, about one-metre in diameter at the base, of cut grass and any herbage, in the places where the adult moths have been recorded in light-traps. The piles are left on site for two to four weeks and then sifted for larvae over a wire-mesh riddle and white sheet. This is an old technique first found to be successful for the Marsh Moth by Edelsten *et al.* (*Entomologist* **77**: 49-50 & 65-72). Since the early 1990s, monitoring has revealed a major decline in the numbers of larvae found in the litter-piles in the traditional area known for the moth, from as many as 108 in a single visit on 23 September 1989 and about 80 on 29 September 1990, with an average of almost two larvae per litter-pile in 1990, to only one or two larvae per session since 2000, and in some years none seen at all. This has been of great concern because apart from occasional individuals

of a small surviving population at Gibraltar Point, further south on the Lincolnshire coast, the Saltfleetby NNR is the only place in Britain on which the Marsh Moth is now being found. There has been much speculation as to the factors responsible for the decline. Possible causes for consideration have included gradual changes in the climate of the region, changes in the hydrology of the site as a result of recent improvements to the drainage system, natural cycles of abundance as a result of predation and/or parasitism and the intensification of hay-cutting and aftermath grazing management. Another worry has been that variation in the size, construction and composition of the litter-piles, the dates of construction and the sifting and the length of time the piles are left in place, might have thrown the results because these have not been absolutely consistent with the early years. The break-through discovery of a large population of larvae on another part of the reserve, with caterpillars occurring in 2005 in the same numbers seen in the traditional areas in 1989 and 1990, reveals that the problem must be principally related to site management. The forty larvae were produced from 24 litter piles, an average of almost two larvae per pile, while none was found in 22 similar piles constructed and sampled at the same dates in the traditional area (litter-pile construction was during the third week of August). The area where larvae remain numerous is not cut for hay but it is lightly grazed by cattle. There is also some grazing by the local rabbit population, which is quite high, with several obvious burrows in the area occupied by the moths and pellets of rabbit dung were frequent when sifting the piles. The litter-piles constructed in this area for this project were made from material cut in the traditional area and the material is dispersed over the sward afterwards. On the visit on 25 September there was a large stack of hay which had been removed from the traditional area and stacked in the corner, but the aftermath had not yet been subjected to grazing by livestock. Sheep were planned to graze the area quite late in the year, up to Christmas. Cutting for hay has become annual and has covered most, but not all, of this field in recent years, but there is no grazing of the adjacent sandbanks. The sward at half of the litter pile sites in the traditional area was not cut in 2005 but no difference was seen in the numbers of larvae in these piles – they were missing from all. One explanation might be that the Marsh Moth population is slow to respond and may require several years to colonise habitat after cessation of cutting. Another possible reason is that a more general factor is continuing to affect the whole field, such as a grazing or drainage issue. More detailed accounts of this break-through discovery, including the sward heights and composition of the swards, have been prepared for Butterfly Conservation and English Nature. This example adds to existing concerns that annual hay-cutting over the entire area occupied by localised invertebrate populations can have catastrophic affects, which are probably intensified by aftermath grazing.

I thank John Walker, Assistant Site Manager for English Nature, for his continuing help and interest in managing areas of the Saltfleetby-Theddlethorpe Dunes NNR to favour the Marsh Moth, and for constructing the litter-piles. Some more parts of the traditional site are now not being cut annually, so that the effects on the Marsh Moth can be studied further. I would also like to thank and acknowledge all those who havebeen involved in the litter-pile sampling and other monitoring of the Marsh

Moth on this site over the years, and in particular Bernard Skinner, Colin Pratt and Gerry Haggett. This above work was undertaken by the author, funded by Butterfly Conservation's "Action for Threatened Moths Project" which receives contributory funding from English Nature. I also thank Writtle College for support in writing up the results for publication. Readers are respectfully reminded that permission from English Nature is necessary for all sampling and other interference with insects on National Nature Reserves in England and that the above work is part of an on-going study.— PAUL WARING, Reader, Centre of Environment & Rural Affairs, Writtle College, Essex. Address for correspondence: Windmill View, 1366 Lincoln Road, Werrington, Peterborough, PE4 6LS.

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Scottish Natural Heritage has recently carried out a review of the natural heritage of the Cairngorms as part of their draft State of the Park report. Therefore this seems an appropriate time to try to produce the most up to date and accurate summary of the lepidoptera within the Cairngorms NNR and in the National Park as a whole. I would be interested in hearing from any of your readers who can supply new or interesting records from the area and in particularly for the years since 2000, when I left the region. Even better of course would be if some of your readers decided to make 2006 the year that they really did 'do' the Cairngorms as a whole and not just the well known areas such as Abernethy, Craigellachie and Loch an Eilein and Rothiemurchus. Records would be specially welcome from the Creag Fhiaclach/ Coire Follais tree line, the highest natural tree line in Britain and from anywhere deep into the Park. There are very few records from the vast areas lying south of Carn Ban Mor, Cairn Toul and Ben Avon and around the headwaters of the rivers Feshie and Eidart and the Geldie Burn. Indeed almost anywhere will produce something interesting and probably new to the Park. All that is needed is a strong pair of boots and limitless energy – and some good waterproofs.

Inevitably the majority of past records have come from the summer months so records for early or late year from any areas of the Park will be especially valuable. Over most of the Park there is free access all year round but I would be pleased to help if anyone would like clarification for any particular estates.

The main published records are listed below. I can supply on request by e-mail all the records I hold in either Word or Excel format. All records will be gratefully acknowledged and passed on to SNH.

References

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– EUAN A M MACALPINE, Auchenshore, Auchencairn, Castle Douglas, DG7 1QZ (E-mail: js.auchen@virgin.net).

Hazards of butterfly collecting: Smørebrødsmellemlægspapir

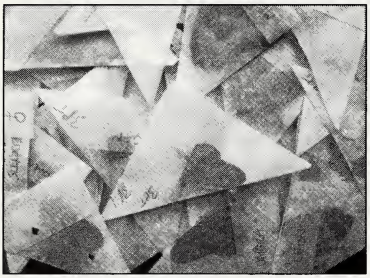
One of the greatest pleasures we have in Denmark is forcing innocent foreign visitors to pronounce the name of our – now rather outdated – national dessert: Rødgrød med fløde. This is a dish made by boiling apples and rhubarb together, with lots of sugar, and serving it on a pie-crust with a topping of whipped cream. And it is actually not bad as desserts go – if you are into that kind of thing. The pleasure – of course – is that never mind how much foreigners may try, none ever comes even close to the correct pronunciation.

This is a bit like the Welsh village of Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch (58 letters long) which even spooks their English-speaking neighbours. When I first visited North Wales back in 1962 [not many butterflies there] as a seriously impecunious student on my way to spending two years as a trainee general in the Danish army – I did eventually make lieutenant – I was advised to invest in a postcard of the railway station at Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch. The station was not out of the ordinary, but the length of the station signboard certainly was. This proved splendid advice – no investment I have made since was as successful. I could now enter any pub, anywhere in Wales, sidle up to any innocent gentlemen having a pint, and present the photo: "Excuse me, sir ... I come from Denmark ... I am really wondering how to pronounce this". The inevitable answer was: "Ahh ... and what will you have to drink?" before getting down to the business of pronunciation. The modest investment of, as I recall, one and sixpence ha'penny netted me many guineas' worth of free drinks provided by amazingly nice people ... and I can still pronounce Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch better than most of my readers. However, I digress ...

The title of this "hazard" – smørebrødsmellemlægspapir – is almost as bad as the standard Danish test for foreigners. This is only about 26 letters. We actually can and we do much better than that, though the 58 letters of Llanfairpwllgwyngyllgo-gerychwyrndrobwllllantysiliogogogoch is hard to improve upon. I shall not try to enter into its pronunciation, but an etymology is called for. We have been eating what the rest of the world calls "open-faced sandwiches" for many centuries and called it smørebrød – literally buttered bread. And we could then top it with anything that took our fancy – and stack the topping up to three fingers thick. So the Earl of Sandwich's idea in 1762 of putting a clumsy extra slice of bread on top of a perfectly good sandwich was a most retrograde step – and calling our excellent Danish smørebrød "open-faced" is a rather insulting case of reverse etymology.

In Denmark millions of slices of open-faced sandwiches are made every morning. The very epitome of the traditional Danish housewife used to be the crafting of a good lunchbox for husband and children – six scrumptious slices in two neat stacks. But you cannot just stack Danish sandwiches on top of each other – the bread of the cheese sandwich would have to rest right on top of the pickled herring underneath it, and a cheese sandwich with bread soggy from pickled herring will not do. The solution is smørebrødsmellemlægspapir – which translated is "paper for separating

sandwiches". This consists of rectangular, semi-transparent, greaseproof pieces of paper (7.2 x 12.1cm) sold in boxes with 500 sheets. And now we come to the point: each of these small sheets is perfect for making the usual small triangles for storing dead butterflies – the size is right for all but the largest swallowtails, the semi-transparency allows easy screening of the material later, the texture of the paper is perfect for folding, the flaps provide plenty of space for writing collecting data, and the grease-resistant quality ensures that a butterfly becoming greasy will not affect others. I just found an old box that I purchased for £ 0.18, but even at the present price of £ 1.15 it is good value for money – much cheaper and better than the stamp-collectors' glassine envelopes used by many (ever tried writing with a ball-point on one of these?). I have given away hundreds of boxes as presents in dozens of countries.



Butterflies papered in Danish smørebrødsmellemlægspapir

Once when I visited my friend Haydon Warren-Gash in Abidjan, where he was the British Ambassador, he asked me to get a supply for his local collectors. I phoned my sister who promised to send ten boxes via the Foreign & Commonwealth Office in London. She carefully labelled the package "sandwich paper". Haydon later told me that he had a stiff e-mail asking whether he was unaware that foodstuffs could not be sent by diplomatic pouch. Haydon insisted it was paper; the post-room insisted the label said sandwich. A Kafkaesque e-mail correspondence ensued and if I remember correctly the parcel was finally sent to his London flat. But they went into good use with the local collectors and Haydon made the most detailed ever inventory of the butterflies in Côte d'Ivoire before he left the country.

I have just packed ten boxes of such paper for a six-week trip to Sierra Leone next week. Most is destined for a detailed butterfly survey in the Gola Forests under the auspices of the Royal Society for the Protection of Birds (RSPB), which I have promised to initiate. These forests are among the few still surviving in Sierra Leone (only about six percent of the original forest cover remains) and should be the home of most of the interesting butterflies that are endemic to the westernmost parts of the African rainforest zone. The forests have been taken under the wing – so to speak – of the RSPB in association with a local conservation organization and the national forestry department. The excellent underlying idea is to convert the remaining forest from ill-planned logging to a conservation area with special emphasis on the ecologically critical parts. Eventually the Gola Forests may become an ecotourism destination with benefits to local employment. After ten years of vicious mayhem Sierra Leone is right at the very top of the world league of misery. If smørebrødsmellemlægspapir could play a tiny role in improving conservation and ecotourism prospects for that unfortunate country, I shall be very pleased.– TORBEN B. LARSEN, UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland (E-mail: torbenlarsen@netnam.vn).

A population of the White-spotted Pinion moth *Cosmia diffinis* (L.)(Lep.: Noctuidae) located in Bedfordshire

At 21.35hrs on the evening of 4 August 2005, the authors recorded a male White-spotted Pinion moth *Cosmia diffinis* (Linn.) to one of five wine-ropes set up along the Carthagena Road bridleway running parallel to the John O'Gaunt Golf Course, through a small copse of elms by the village of Potton, near Sandy, Bedfordshire. It was only just getting dark under the trees at this time and the moth was one of only three moths to arrive this early. This was followed by two more males at a Robinson light-trap 100m away and deeper within the copse by 22.30hrs the same evening. The wine-ropes employed a standard mixture of strong-smelling red wine and white sugar, with no other ingredients.

The significance of this result is that three individuals of this nationally rare, elm-dependent species, recorded amongst elms so soon after dusk strongly indicates the presence of a resident population, the first to be located in Bedfordshire since the last individuals were seen at Coppice Wood, Riseley, in 1985 (Arnold *et al.*, 1997. *The butterflies and moths of Bedfordshire*). Other British populations of this moth are currently known only in Huntingdonshire, Cambridgeshire and Essex (Waring *et al.*, 2003. *Field guide to the moths of Great Britain and Ireland*).

PW has been conducting research on the White-spotted Pinion since 1999 as part of Butterfly Conservation's "Action for Threatened Moths" project. Some aspects of the project have included studying the ecology and habitat requirements of the moth as adults and larvae in Huntingdonshire and Cambridgeshire where it is known and monitored (see *Ent. Rec.* **113**: 135-138; **114**: 84-88 & 115-117), discovery and demonstration of a breeding population in Essex (see *Ent. Rec.* **117**: 80-83) and searches for the moth in Bedfordshire (e.g. *Br. J. ent. Nat. Hist.* **18**: 153-155) and elsewhere north to Cheshire and Cumbria (e.g. *Br. J. ent. Nat. Hist.* **16**: 244-245 & 65-66). PW knows of only two British records since 1990 of the moth outside of Huntingdonshire, Cambridgeshire and Essex, despite the fact that it was the first target species for National Moth Night, back in 2001 (*Atropos* **16**: 34-37), during which many light-traps were operated near elms throughout England at an appropriate time of year. The two records are of single individuals recorded by John Day in a 125W MV Skinner light-trap in his garden at Potton (OS grid reference TL 215492), on 2 August 2002 and on 11 August 2003. Both were released the next day. There are no elms in or around John's garden. The nearest are in a copse about 500m to the south (TL 215486) along the Carthagena Road bridle-way between grassy fields, a quarry and a golf course. Accordingly PW arranged with John to search for caterpillars of the moth in this copse on 27 May 2005. We were also joined by Andrew Frost. Together we searched for three man hours, but failed to find any larvae of this species, though PW did find one final instar larva of the Lesser-spotted Pinion *Cosmia affinis* between two elm leaves at about head-height (2m). This was on a lower branch of one of a number of young elms (main trunks only 10cm in diameter at should-height) growing together in the dappled shade of larger elm trees. Accordingly PW arranged the above light-trapping evening with John, who does not have a portable generator for his trap and needed assistance. Being a devotee of

wine-ropes, PW added these to his list of equipment. There are old reports that the White-spotted Pinion comes to bait. For example Bretherton (in: *A list of the macro-lepidoptera of the Oxford District, 1940*) reports that in 1934 the species was so numerous at sugar at Tubney Wood that "a hundred could have been taken in one evening". However, PW has tried baiting for this species on several occasions since 1999, with negative results. The most noteworthy occasion was at Overhaul Grove, Cambridgeshire, on 7 August 2003, a really warm, calm, dry, cloudy night with a dusk temperature of 21°C and a night minimum of 15°C (see *British Wildlife* **15**: 61). None came to ten wine-ropes despite attraction of an Old Lady moth *Mormo maura* and two to three moths of other, more frequently seen, species per wine-rope, including mainly Large Yellow Underwing *Noctua pronuba*, Common Rustic *Mesapamea secalis* agg., Angle Shades *Phlogophora meticulosa*, Flame Shoulder *Ochropleura plecta* and Common Wainscot *Mythimna pallens*. The lack of White-spotted Pinion at the wine-ropes was also despite the arrival at the light-traps of at least seven of them by 22.30hrs, including a female at 22.10hrs. On the same night PW captured 16 individuals, all males, in a single Robinson trap operated all night in nearby Dry Drayton. It is therefore pleasing to record one White-spotted Pinion to bait at last. It was one of only a few moths to the five wine-ropes on 4 August 2005 - the others comprising a Lesser-spotted Pinion, a Large Yellow Underwing, a Common Rustic, a Svenssons's Copper Underwing *Amphipyra berbera svenssoni* Fletcher and, at 23.20hrs, an immaculate Red Underwing *Catocala nupta* (L.). The weather on this occasion was cloudy, dry, 19°C at dusk, with a light breeze, no moon and at 23.30hrs light rain began. The White-spotted Pinion was still on the wine-rope at 23.20hrs when we began packing up the ropes.

The two light traps at the copse at Potton were operated until mid-night and the catches also included four Lesser-spotted Pinion, a Least Carpet *Idaea rusticata atrosignaria* and a Dusky Thorn *Ennomos fuscantaria*. The Least Carpet is of interest in that it is expanding its range and breeding area. When the county list for Bedfordshire was published in 1997 (Arnold *et al.* above) there were only three records for the county, all from the Rothamsted Insect Survey light-trap at Cockayne Hatley, in 1976, 1980 and 1996. In 2004 JD recorded the first Least Carpets for his garden in Potton, on 24 & 31 July. None was sen during trapping at this site from 2001-2003 but an additional individual was captured on 30 July 2005 so perhaps they are now breeding locally. The Dusky Thorn is of interest in that it has suffered a massive decline in abundance in Britain since 1968, as monitored by the Rothamsted Insect Survey. For every 1000 Dusky Thorn in 1968, only 20 are present today (*British Wildlife* **16**: 390). On 8 & 22 August 2005 JD recorded the Dusky Thorn in his garden for the first time ever, since he started trapping there in 2001.

We note that there are other small copses and hedgerows with elms within view of the Carthagena Road bridleway site where we have found the White-spotted Pinion and we suspect it may be breeding more widely in this area. Hopefully it will be possible to organise further searches both for adults and larvae in future years.

PW would like to thank John Day and Andrew Frost for their help with the survey, Mr Brookman who owns the adjacent farm and quarry, for access permission, Mr Stephen Anthony of the John O'Gaunt Golf Course for his co-operation and interest and Butterfly Conservation who finance the project, with contributory funding from English Nature.— PAUL WARING & JOHN DAY, Windmill View, 1366 Lincoln Road, Werrington, Peterborough, PE4 6LS.

Biston betularia L. ab. *albapicata* Cockayne (Lep.: Geometridae) in Kent

This aberration was described by Cockayne in 1953 (*Ent. Rec.* **65**: 168, plate 13) from a specimen in the National (RCK) Collection, taken at Tibshelf, Derbyshire in 1925.

It closely resembles ab. *carbonaria* Jordan, but the apex of the forewing at its extremity is white, although the bordering fringe remains black, and on the hindwing costa there is a small area which is whitish, speckled black. A male specimen was attracted to my garden mv light here at Dartford on 21 July 2005. This is an interesting aberration, perhaps easily overlooked, and one that I have not seen previously. It is not listed by Chalmers-Hunt 1976 (The butterflies and Moths of Kent. *Suppl. Ent. Rec.* **88** 156) and would appear to be a rarity. The Dartford specimen is probably the first to be noted for the county.— B. K. WEST, 36 Briar Road, Dartford, Kent DA5 2HN.

Slender Ground-hopper *Tetrix subulata* (L.) (Orth.: Tetrigidae) in Northamptonshire

According to Ragge (1965. *Grasshoppers, Crickets and Cockroaches of the British Isles*. Warne) and, more recently Marshall & Haes (1990. *Grasshoppers and allied insects of Great Britain and Ireland*), the Slender Ground-hopper *Tetrix subulata* has not been recorded from Northamptonshire. Thus, it was with some pleasure that I discovered several examples inhabiting a small overflow pond near to the village of Braunston, Northamptonshire. All of the insects jumped into the water upon my approach and it was quite fascinating to watch them, swim ashore, just under the surface. One was approached by a Common Pond Skater *Gerris lacustris* (L.) and immediately stopped swimming until the danger had passed. One wonders if the groundhopper was aware of the predatory nature of the skater.

The pond is often completely dry by July and does not fill up again until the winter rains. Do the immature adult hoppers over-winter in the mud at the bottom of the pond? The surrounding vegetation is usually cropped short by cattle that wallow whilst water remains. This must make it a hazardous habitat for the ground-hopper. — K. F. WILLIAMS, Arcanum House, 45 Braunston Road, Daventry, Northamptonshire NN11 9BY.

New species of Lepidoptera to the Isle of Wight

I recorded an example of *Eucosma conterminana* (Guenée) (Tortricidae) at Totland on 26 July 26 2004. This species was first recorded in Hampshire at Itchen Valley in 1976 and there have been several records recently from South Hampshire, possibly associated with the increase in the foodplant – Prickly Lettuce *Lactuca serriola*. It now seems to be well-established, in the Portsmouth and Southsea area. This example was identified, at the annual exhibition of the British Entomological & Natural History Society in November 2005.

I recorded the Barred Tooth-striped *Trichopteryx polycommata* (D. & S.) (Geometridae) at Totland on 2 April 2005 and successfully beat one larva from Wild Privet in early May on West High Down. The foodplant is plentiful here and no doubt the moth has been overlooked for many years.

Jaraes Halsey took the Rest Harrow *Aplasta ononaria* (Fuessly) (Geometridae) at Sonchurch on 17 August. There are four records from Hampshire, all from VC 11 but this is the first for the Island.

James Halsey also recorded the first examples of Clancy's Rustic *Paradrina kadenii* (Freyer) (Noctuidae) with one on 20 September, one on 28 September, two on 22 & 26 October. I recorded one at Totland, on 16 October 2005. This species has been spreading from Kent along the South coast and is probably now, or very soon will be, resident on the Island.— SAM KNILL-JONES, 1 Moorside, Moons Hill, Totland, Isle of Wight P039 OHU.

The Juniper Pug, *Eupithecia pusillata* (D. & S.) (Lep.: Geometridae), a first for Jersey

During the period 28 May to 1 June 2004, the Rothamsted Insect Survey light trap at Trinity (trap number 547), caught a single *Eupithecia pusillata*, the first record from Jersey.

This species is locally common throughout much of the British Isles and has been recorded on Guernsey. As it feeds on Wild Juniper (*Juniperus communis*) and cultivated junipers (Riley, 2003. *British and Irish Pug Moths.* Harley Books) it can take advantage of both natural and man-made habitats, making it surprising that the species has not previously been recorded on Jersey.

On the British mainland, *E. pusillata* is not found on the wing until July, so this individual appears to be following the flight season shown by Continental specimens. In southern France the species appears in May (T. Hollingworth, pers. com.); this information corroborates that of Culot, (1920. *Noctuelles et Géomètres d'Europe* **IV**. 1987 reprint by Apollo Books), where it is stated that that the adult emerges in April and May. Either this individual was a vagrant from the mainland or, perhaps more likely, at these latitudes the species has a life cycle more similar to those in mainland Europe than the UK.

Many thanks to Terence Hollingworth for his comments on the species in southern France and to Roger Long for information regarding its occurrence in Jersey. Thank

you also to Alex Vautier for her long-standing hard work in operating the light trap. — PHILIP J. L. GOULD, Co-ordinator, Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Chrysocrambus linetella (Fabr.) (Lep.: Pyralidae) in the Channel Islands

Records of *Chrysocrambus linetella* (Fabr.) in the British Isles appear to be infrequent enough for recent occurrences of it in the Channel Islands to be noted. One came to a 125w light trap on Grouville Common, Jersey, on 16 June 2004, and while moth-trapping on an annual visit to Sark, I caught another in an actinic light trap in woodland in Dixcart Valley, twelve days later on 28 June 2004. Both moths were in slightly worn condition and were sent for dissection and confirmation of their identities to Philip Sterling, to whom I express grateful thanks.

These are the first records for both Jersey and Sark, the only other Channel Islands records being of two taken in Guernsey, at St John on 29 June 1986, by R. A. Austin (Austin, 1990. Entomology Section Report for 1989. *Rep. Trans. Soc. Guernesiaise* **22**: 543-48) and at Les Pecqueries, on 5 July 2001, by M. P. Lawlor. (Austin, 2002. Entomology Section Report for 2001. *Rep. Trans. Soc. Guernesiaise* **25**: 38-49).— ROGER LONG, Ozarda, Les Hamonnets, St John, Jersey, Channel Islands JE3 4FP.

Infurcitinea argentimaculella (Stt.) (Lep: Tineidae, Meessiinae): A first record for Yorkshire

My wife and myself were walking though Grosmont, North Yorkshire on 18 February 2006, when I saw a wall with covered with a blue-green powdery lichen (*Lepraria* sp.). John Langmaid had pointed out to me the larval tubes of *Infurcitinea argentimaculella*, on a similar substrate on trees in North Hampshire, earlier in the week. A search of the wall soon revealed the presence of such tubes. I also found another colony on the wall of a bridge in Grosmont, again on *Lepraria*. This seemed to be the first record for this species in Yorkshire and I contacted Harry Beaumont, on John's suggestion, who confirmed this. I am grateful to John Langmaid for his help with this species.— ROB EDMUNDS, 32 Woodcote Green, Fleet, Hampshire GU51 4EY (E-mail: r.edmunds@ntlworld.com).

Euplagia quadripunctaria Poda (Lep.: Arctiidae) in north-west Kent and a previously unrecorded larval foodplant

On 12 August 2005, a male of the normal red form of *Euplagia quadripunctaria* was attracted to my garden mv light at Dartford. On 30 August, a female specimen of the intermediate orange aberration appeared, followed on 4 September by a further red male which had been attacked in the trap by a bird (undoubtedly a robin *Erithacus rubecula*).

For over a hundred years this species was rarely reported in Britain outside south Devon. However, in the 1990s and after it was noted increasingly along the South Coast eastwards and small colonies became established in the vicinity of Portland, Dorset, the Isle of Wight and Rye, Sussex in that order suggesting extended territorial expansion eastwards from the South Devon stronghold (B. Skinner, pers. comm.) rather than immigration from the Channel Islands or the Continent. In 2004 and 2005, the species was observed on the Kent coast; for 2004 Ferguson (*Kent Moth Report, 2004* Butterfly Conservation) states that *E. quadripunctaria* again occurred in the Dover area, and was recorded from the area around Dungeness, but that the concentration near Dover was not typical of migration, and could possibly indicate local breeding. The reporting of the three specimens at Dartford has been delayed while extensive enquiries could be made regarding the possibility of release of specimens, but no evidence for this has been found.

In recent years colonies of several other unlikely species have been established here. *Mythimna albipuncta* (D.& S.) and *Eumichtis lichenea* (Hb.), coastal insects presumably having arrived via the Thames Estuary and *Cryphia algae* (Fabr.) from the Continent. The *E. quadripunctaria* probably came by the same route, either direct from the Continent or from the Kent coast.

The specimen attacked in the mv light trap had the thorax and abdomen, which was almost severed from it, bearing signs of the assault, but were not eaten. Although it was undoubtedly the most conspicuous moth, numerous others were plainly visible. The bright warning colours of this aposematic species were perhaps unheeded because of the rarity of such insects to-day.

The larvae of *E. quadripunctaria* have been found eating a considerable number of herbaceous plants, but I have not seen mention of forget-me-not (*Myosotis* sp.). I observed several larvae on scattered plants of this on an allotment on the northern outskirts of Exeter in June 1938, but on no other species of plant.— B. K. West, 36 Briar Road, Dartford, Kent DA5 2HN.

Moths at birch sap

Whilst waiting for moths to arrive at a single 125 watt mv Robinson trap on 29 March 2006, during a visit to Fenns and Whixall Moss National Nature Reserve, Shropshire, it was noted that that several of the birch trees along the ride glistened in the torchlight. Investigation of this revealed that the ride-side trees had been mechanically flailed with many of the smaller saplings roughly broken off and the larger trees having gashes in their trunks resulting in copious amounts of sap running from the birches. Moths were noted buzzing around these trees and saplings and on closer examination many were found feeding. We only stayed at the site for about 1.5 hours from dusk onwards, but it was clear in this time that the sap runs were far more attractive than the single light trap. The results are as follows:

Species	MV light	Birch sap
Semioscopis avellanella		1
Tortricodes alternella	1	
Acleris notana (not gen. det.)		2
Yellow Horned *Achyla flavicornis*	approx. 10	approx. 25
March Moth *Alsophila aescularia*	1	
Oak Beauty *Biston strataria*		1 (though not feeding)
Pine Beauty *Panolis flammea*	1	
Small Quaker *Orthosia cruda*	1	
Common Quaker *Orthosia cerasi*		2
Clouded Drab *Orthosia incerta*		2
Twin-spotted Quaker *Orthosia munda*		approx. 10
Hebrew Character *Orthosia gothica*		3
Satellite *Eupsilia transversa*	1	approx. 25
Chestnut *Consitra vaccinii*		approx. 5

It is possibly worth noting that although there were plenty of sallows in the general area, none appeared to be in blossom at the time.

A quick look through available literature indicates that this appears to be an infrequently reported observation, although birch sap has long been known as an attractant for moths. J. W. Tutt (1902. *Practical hints for the field lepidopterist* **2**: 18) gives an observation by P. C. Reid who refers to the "common practice to bore holes ....in the trunks of birch-trees" in Scotland and in early spring finding species such as the Yellow Horned *Achyla flavicornis*, Sword-grass *Xylena exsoleta* and the Red Sword-grass *X. vetusta* amongst many others at the resultant sap runs, adding that they fed on this sap "even more freely than.... insects come to sugar".

We would like to take this opportunity to thank Dr Joan Daniels (Site Manager, English Nature) for permission to record moths at the site.— MARK PARSONS & KELLY THOMAS, Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP.

The first records of *Gonocerus acuteangulatus* (Goeze) (Het.: Coreidae) in Buckinghamshire and another Hampshire record

Gonocerus acuteangulatus is an attractive and distinctive bug. It has the English name of Box Bug, and for many years was known in Britain only from the Box Hill area of Surrey, where its foodplant was Box *Buxus sempervirens*. The story of its spread to other foodplants and counties from 1990 onwards is told in R. Hawkins, 2003, *Shieldbugs of Surrey* (Surrey Wildlife Trust). Hawkins gives a range of foodplants including Hawthorn, wild and cultivated roses, Buckthorn and Yew. (A web search reveals that *G. acuteangulatus* is considered a pest of hazelnuts by commercial growers in Italy and Turkey.)

I first became acquainted with it in Hampshire (VC 11) in 2004, when my two-year-old son Dominic and I beat some conifers on New Years Day, at Chappetts Copse Wildlife Trust reserve (O. S. grid reference SU 653234). By that time the Box Bug was apparently widespread in Hampshire and Berkshire as well as Surrey and beyond (Jonty Denton, pers. comm.).

On 21 September 2005, I found what appears to be the first Buckinghamshire specimen, on a mixed hedge at Little Kimble railway station (SP 823066). The hedge contains a large specimen Leyland Cypress *Cupressocyparis* x *leylandii*. The following month *Gonocerus* was recorded again in Buckinghamshire, by Tony Marshall, who describes the record in the Buckinghamshire Invertebrate Group newsletter: "Found 15th October 2005 in Prestwood parish churchyard [SP 873996], sunning itself on a cherry-laurel hedge, not far from several yew-trees." This is some 8 kilometres south-east of my records.

Some winter beating produced three more Buckinghamshire specimens, close to the location of the first specimen. Two individuals were from Juniper *Juniperus communis* at Grangelands reserve (SP 827047), on 25 January 2006 and one from Leyland Cypress in my garden at Great Kimble (SP 820062) on 27 January 2006. Roger Hawkins' Surrey atlas points out that there is a related bug feeding on the Juniper, *Gonocerus juniperi*, not yet recorded in Britain, but my specimens from Juniper were not this latter species.

All these Buckinghamshire records are close to the Chequers Estate, which contains good stands of native Box, so it is just possible that *G. acuteangulatus* has maintained a population here as it had done at Box Hill. However, it was not recorded by G.E. Woodroffe who worked the Chilterns for bugs in the 1950s-1970s (Bernard Nau, pers. comm.). Given the lack of any previous records for VC 24 (Buckinghamshire), and its apparent capacity for rapid spread in recent years, it seems likely that it is a recent arrival in the county. If it continues to make use of Leyland Cypress the Box Bug looks set to become a familiar garden insect in future.

Thanks to Roy Maycock (Buckinghamshire plant recorder) for confirming the identity of the Lawson's Cypress, to Tony Marshall for allowing me to include his record, and to Bernard Nau for commenting on a draft of this note. — Martin C. Harvey, Buckinghamshire and Milton Keynes Environmental Records Centre. (E-mail: martin@kitenet.freeserve.co.uk).

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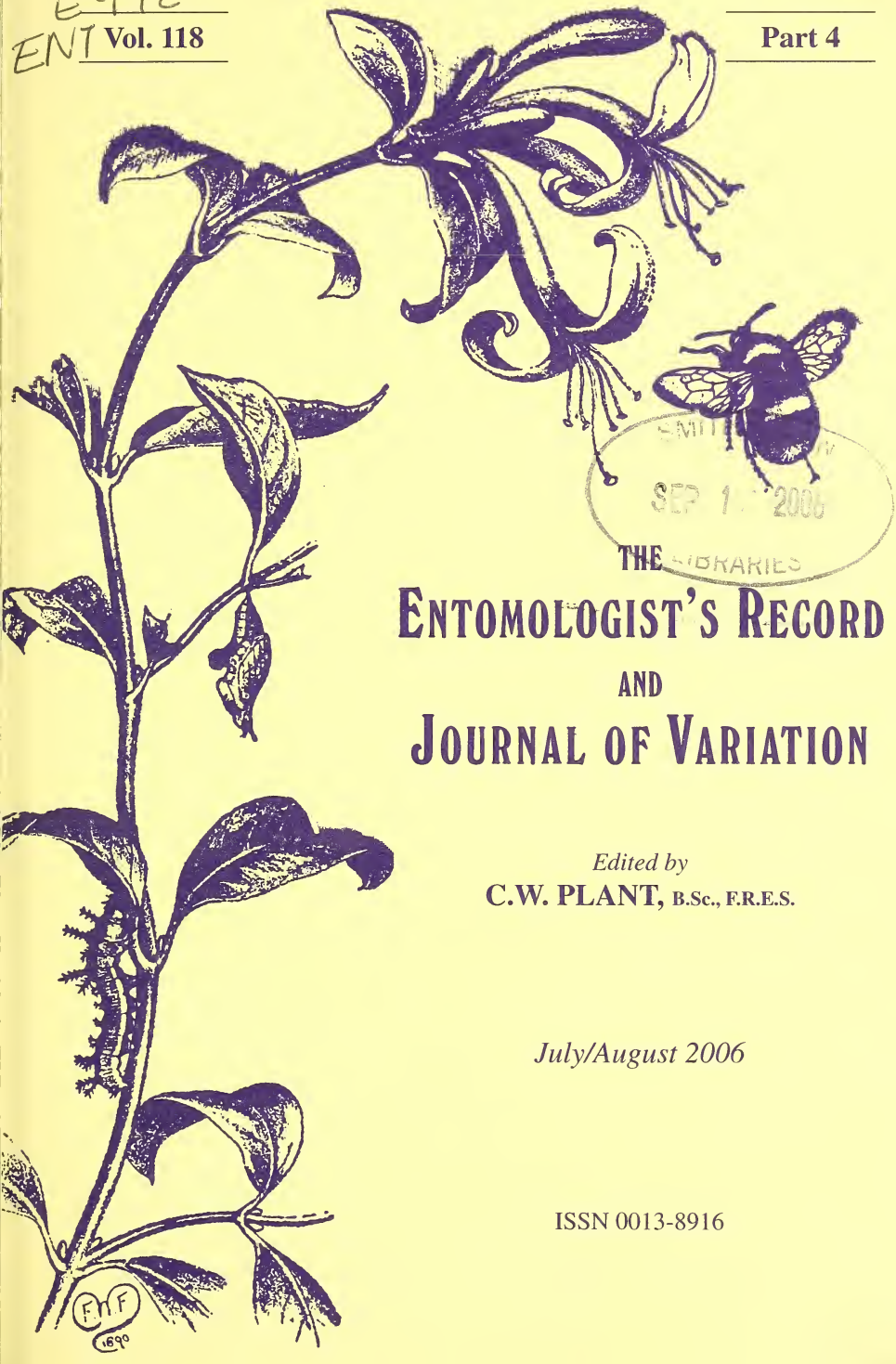

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Editor

C.W. PLANT, B.Sc., F.R.E.S.

14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

Registrar

R.F. McCormick, F.R.E.S.

36 Paradise Road,
Teignmouth, Devon TQ14 8NR

Treasurer

C.C. Penney, F.R.E.S.

109 Waveney Drive, Springfield,
Chelmsford, Essex CM1 7QA

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THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 2002

SEAN CLANCY[1] AND BERNARD SKINNER[2]

[1] *1 Myrtle Villas, Sussex Road, New Romney, Kent TN28 8DY*

[2] *5 Rawlins Close, South Croydon, Surrey CR2 8JS*

Abstract

Formally accepted records of immigrant Lepidoptera occurring in the British Isles during the year 2002 are listed and discussed. For less frequently encountered species full information is given; for the commoner immigrants recorded during the season, a selection of the more significant records is presented.

Introduction

Insect immigration during 2002 was, on the whole, rather subdued, with suitable weather conditions generally short-lived and localised in nature. However, arrival conditions were prevalent in south-west England during much of October producing high counts of *Udea ferrugalis* (Hb.), *Nomophila noctuella* (D. & S.), *Mythimna vitellina* (Hb.) and *Mythimna unipuncta* (Haw.) during this period. This aside, numbers of regular immigrant species were fairly unexceptional, although good numbers of *Rhodometra sacraria* (L.), *Hyles livornica* (Esp.), *Spodoptera exigua* (Hb.) and *Trichoplusia ni* (Hb.) were recorded; the latter species unusually most frequent in the south-east. Some impressive counts of *Plutella xylostella* (L.) were reported at light and by day between July and September, but these were widely spread and probably largely the result of local breeding. High numbers of both *Orthonama obstipata* (Fab.) and *Heliothis peltigera* (D. & S.) were recorded over a protracted period, with both these species recorded widely at inland sites and as far north the Shetlands. Larvae of *Heliothis peltigera* were also recorded at several sites, and many of the later records of this species were certainly the progeny of earlier arrivals. Good counts of *Vanessa cardui* (L.) were particularly evident in August, with occasional high counts of *Colias croceus* (Geoff.) recorded from mid-south coast localities in late summer and early autumn.

The first few immigrants recorded during January and February were likely to have been the residue from the previous autumn's migrations, and this may have been the origin of a single *Euchromius ocellea* (Haw.) found dead in early January. The arrival of two *Helicoverpa armigera* (Hb.) and a few *Hyles livornica* and *Vanessa cardui* in late March signalled the beginning of the migrant season and immigration continued at a sporadic and low level throughout much of April and May. An arrival of *Spodoptera exigua* occurred, particularly into Dorset, during the third week of May, and *Hyles livornica* were recorded from a number of coastal sites from mid-month. The year's only *Actinotia polyodon* (Clerck) in late May was the first scarce migrant of 2002.

Four extralimital records of *Lithostege griseata* (D. & S.) in early June were unprecedented, although these were all to the north of known populations and likely

to refer to vagrants. Numbers of regular migrants increased during the month, with *Hyles livornica*, *Spodoptera exigua* and *Heliothis peltigera* occurring more widely, and an example of the migrant plume *Oxyptilus laetus* (Zell.) recorded. July saw the fourth British record of *Megalographa biloba* (Steph.), two records of *Trachea atriplicis* (L.), the year's only *Nola aerugula* (Hb.), and two *Drepana curvatula* (Borkh.) that arrived on the 28th at adjacent localities.

The first UK records of *Cameraria ohridella* (Deschka & Dimic) occurred in the London suburbs in July and the subsequent spread of this leaf-miner can only be described as dramatic. In a similar vein, the series of records of *Cryphia algae* (Fab.) in late July and early August appear, at the time of writing, to have been the harbingers of a successful, localised colonisation by this species in VC's 16 & 21, and probably elsewhere.

A short period of warm southerly winds in early August produced a continental airstream in south-east England and saw a concentrated arrival of rarer immigrant species. These included two more *Drepana curvatula*, *Peribatodes ilicaria* (Geyer), *Hyles euphorbiae* (L.), *Notodonta tritophus* (D. & S.), *Acronicta auricoma* (D. & S.), and at least two immigrant examples of *Assara terebrella* (Zinck.). A record of *Enargia paleacea* (Esp.) early in the month from VC H33 was the first of this species in Ireland, whilst an example of *Cyclophora ruficiliaria* (H.-S.) from Jersey in mid-August subsequently led to the discovery of a long-established breeding population in VC 113.

A number of interesting species were recorded from widely scattered localities during September, these including two *Daphnis nerii* (L.), *Schinia scutosa* (D. & S.), the second *Megalographa biloba* of the year, the third British record of *Catocala nymphagoga* (Esp.), and the fourth British record of *Hypena obesalis* (Treit.). Two examples of *Nycteola asiatica* (Krul.) taken on the east coast during the month were thought to be the first British records of this species, but the subsequent examination of cabinet specimens identified two earlier specimens from Kent (see Appendix I). An example of the southern European species *Agrotis syricola* (Corti & Draudt) was taken on Jersey in September.

A record of *Platyperigea kadenii* (Frey.) in early October was the first from Britain and north-west Europe but, at the time of writing, could be recognised as the herald of a rapid north-western range extension into Britain and the near Continent by this species. Later in the month there were good numbers of regular immigrants, particularly into the south-west, whilst three examples of *Ochropleura leucogaster* (Frey.), two *Hippotion celerio* (L.) and a few *Trigonophora flammea* (Esp.) also occurred during this period.

Immigrant activity slowly petered out during November, although the season's only *Thysanoplusia orichalcea* (Frey.) was found dead early in the month. Although species such as *Udea ferrugalis* and *Mythimna unipuncta* lingered on into December, the last month of the year was virtually bereft of fresh immigration.

Finally, one interesting aspect of the 2002 season was the number records of unusual species likely to have made an assisted arrival in our shores. These included

the first occurrences of such diverse species as *Anatrachyntis badia* (Hodges), *Paysandisia archon* (Burmeister), *Eupithecia massiliata* (Mill. & Dard.), and *Chrysodeixis eriosoma* (Doubl.). Additional likely introductions included several *Dryas julia* (Fabr.), and single examples of *Epichoristodes acerbella* (Walk.), *Lampides boeticus* (L.), *Cacyreus marshalli* (Butler), *Limenitis reducta* (Stgr.) and *Utetheisa pulchella* (L.). Given the circumstances of these records and/or the breeding range of the species involved, it seems probable they were all imported with plant material/produce or for the exotic insect trade.

Guidelines for contributors

To avoid unnecessary delays in publishing future reports, it would help us greatly if contributors adhere to the following guidelines: Data should include the vice-county, recorder, stage (if not an adult), recording method (if not at light), number observed, and the date. For light-trap records, please give the date the trap was switched on, not the date it was inspected. This is a universally accepted convention to avoid the possible duplication of records. During the course of collating this report, it was often the case that a single-date discrepancy was encountered for nocturnal records within different sourced versions of the same record. In almost all such cases (unless the first date was clearly stated to be an error) the earlier date has been given in the following account, as it was assumed the later date referred to the day the light-trap was examined. However, it is likely that some errors have been unavoidable due to this inconsistency in recording data, and it would be helpful if recorders routinely used the earlier date for future records, particularly when they are submitted or published.

There was a noticeable shortage of records from more northern, inland sites submitted for the current report. Records of migrant species from such sites would be gratefully received for future reports, and the new categories of listed records for commoner immigrant species have been introduced to take account of records of this nature. It is hoped to include regional totals for commoner migrant species from 2003 onwards, so the provision of such records will help provide a balanced picture of arrival patterns.

It should also be noted that in response to the increasing volume of records now received and sourced, there is a slight increase in the number of species summarised in Annex 2. However, in future reports, statistics relating to the total number and distribution of **all** records received/sourced of these species will hopefully be included, so please continue to send records of all the Annex 2 species, even if they may not fall into the categories detailed in the current report.

County recorders, or those submitting large volumes of data are asked to sort their data by vice-county, species name, and then by date order. Finally, contributions are particularly welcome in electronic format (MS Word or Excel etc.) to the following e-mail address: trapsite@ukonline.co.uk. Paper copies may also be submitted to either postal address over the page.

The following abbreviations have been reduced in number and amended to clarify their meaning, and the status of individual species. The categorisation of listed species has also been amended in many cases, both to reflect this and recent changes in status. They also no longer include any variation in status found on the Channel Islands (VC **113**).

Abbreviations

[I] - Primary immigrant or the direct progeny thereof. Where this is the only category given, believed to relate to a species that is unable to maintain a viable, self-sustaining resident population through a typical British winter.

[In] – Introduction or importation. A species artificially introduced into Britain by man. These can include synanthropic species that are only able to sustain breeding populations in Britain under conditions that do not occur naturally.

[MC] – Migrant Colonist. An immigrant species that has established extant, short-term breeding populations in Britain, but these believed to have been present for fewer than ten consecutive years at the time of the given records.

[R] – Resident. A species with an established breeding population in Britain, this having been present for a minimum of ten successive years.

[FR] – Former Resident. A species that was formerly an established resident in Britain but has no known resident populations in Britain at the time of writing.

[V] – Vagrant/wanderer. A species that regularly occurs well away from its known British breeding range, but these records thought most likely to have been the result of internal, domestic dispersal.

Within the individual species accounts, vice counties are listed in numerical order and localities within each vice county are given alphabetically. Irish records are given in a separate paragraph.

Channel Islands (VC **113**) records are no longer included in the main species accounts due to their southerly position, locating them outside the biogeographical area of Great Britain and Ireland. This often leads to differing statuses of listed species within VC **113** and occurrence patterns of immigrant species that are not comparable with records in Great Britain and Ireland. However, records of recent colonists and rare immigrants in VC **113** can be precursors of arrivals in Britain, so significant VC **113** records are given in Annex 3.

ANNEX 1: RECORDS OF SCARCER SPECIES IN 2002

GRACILLARIIDAE

0366a *Cameraria ohridella* (Deschka & Dimic) [MC/In]

SURREY [**17**] Wimbledon, 14.7, adults and mines found on *Aesculus hippocastanum*. New to Britain (MSP, in Langmaid & Young, 2003). A widely predicted new arrival, this species having spread westwards across mainland Europe in recent years.

CHOREUTIDAE

0386 ***Tebenna micalis*** **(Mann) [I]**
W. CORNWALL [**1**] IOS: Tresco, Borough Farm, 8.10 (AM). S. DEVON [**3**] Abbotskerswell, 16.9 (Beaumont, 2003). S. WILTSHIRE [**8**] West Park, near Sandleheath, 2.10 (DGG, in Langmaid & Young, 2003), 6.10 (2), disturbed from foodplant at dusk (DGG per IRT).

YPONOMEUTIDAE

0428 ***Yponomeuta rorrella*** **(Hb.) [R][I/V]**
DORSET [**9**] Walditch, 12.8 (MSP). N. ESSEX [**19**] Dovercourt, 30.7 (15) (CG). BERKSHIRE [**22**] Fernham, 28.7, 31.7, 5.8, 6.8 (SN). E. NORFOLK [**27**] Eccles-on-Sea, 28.7, 31.7 (2) (Bowman, 2003). MONMOUTHSHIRE [**35**] Hendre Woods, near Monmouth, 15.7, first VC record (MJW, in Langmaid & Young, 2003).

0473 ***Acrolepiopsis assectella*** **(Zell.) [R][I/V]**
W. SUSSEX [**13**] Kingsham, 14.8 (SP, in Langmaid & Young, 2003). MIDDLESEX [**21**] Ealing, March, undated, first VC record (RT).

ETHMIIDAE

0719 ***Ethmia quadrillella*** **(Goeze) [R][I][V]**
N. ESSEX [**19**] Dovercourt, 29.7, 11.8 (CG).

0720 ***Ethmia bipunctella*** **(Fabr.) [R][I][V]**
DORSET [**9**] Portland Bird Observatory, 2.6 (MC).

COSMOPTERIGIDAE

0897a ***Anatrachyntis badia*** **(Hodges) [In]**
S. DEVON [**3**] Plymouth area, four moths exhibited from seven reared from pomegranates from two supermarkets during 2001 – 2002. A native of North America, but these were bred from pomegranates believed to have been imported from Spain. New to Britain (R.J. Heckford, in Beaumont, 2003).

TORTRICIDAE

997 ***Epichoristodes acerbella*** **(Walk.) [In]**
BERKSHIRE [**22**] Fernham, 26.7, only previously recorded in Britain as a larval intercept (SN, det. MFVC & KET).

PYRALIDAE

1289 ***Euchromius ocellea*** **(Haw.) [I]**
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 21.10, 29.10 (MAS); near Marazion, 6.1, found dead (SJB).

1296 ***Crambus silvella*** **(Hb.) [R][V/I]**
S. WILTSHIRE [**8**] Plaitford Common, 2.7, first VC record (M.H. Smith).

1330 ***Donacaula mucronellus*** **(Zinck.) [R][V/I]**
E. KENT [**15**] Dymchurch, 1.6 (JO per SPC). S.E. YORKSHIRE [**61**] Strensall Common, 27.7, first VC and second county record (Beaumont, 2003).

1356a ***Evergestis limbata*** **(L.) [I][V][MC]**
DORSET [**9**] East Lulworth, 12.8 (MSP, RF); Trigon, 18.7 (CM). S. HAMPSHIRE [**11**] Chandler's Ford, 20.8 (2) (B. Goater per IRT).
Records most likely to relate to range expansion within southern England.

1357 ***Evergestis extimalis*** **(Scop.) [R][I][V]**
An established resident in parts of southern England and East Anglia, and recorded more sporadically elsewhere. The following records are from areas where resident populations are not currently known, and are likely to relate to immigrant or vagrant examples.
N. ESSEX [**19**] Dovercourt, 30.7 (2) (CG); Kirby-le-Soken, 29.7 (PB). HERTFORDSHIRE [**20**] Ponders End, 6.8 (AM^2). E. NORFOLK [**27**] Eccles-on-Sea, 13.8 (Bowman, 2003). S.E. YORKSHIRE [**61**] Spurn, 13.8 (Spence, 2003).

1368 ***Loxostege sticticalis*** **(L.) [I][FR]**
E. KENT [**15**] Dungeness, 3.8 (DW^2); Sandwich, 17.7 (P. Forrest). E. NORFOLK [**27**] Horsey, 5.8 (GF). W. NORFOLK [**28**] near Weeting, 14.8 (3) (JH^3). LEICESTERSHIRE [**55**] Rutland Water, 7.8, first VC record (RF^2 per AM). S.E. YORKSHIRE [**61**] Spurn, 7.8, by day (PAC), 8.8 (BRS). N.W. YORKSHIRE [**65**] Hutton Conyers, 6.8 (CF). BANFFSHIRE [**94**] Ordiquhill, 10.9 (R. Leverton). SHETLAND ISLANDS [**112**] Eswick, 23.8 (TR).

1370 ***Sitochroa palealis*** **(D. & S.) [I][R]**
Coastal records away from known populations.
DORSET [**9**] Portland Bird Observatory, 24.7 – 15.8 (7) (MC); West Bexington, 20.8 (RE). E. KENT [**15**] Dungeness area, July (2), August (2) (per SPC). N. LINCOLNSHIRE [**54**] Gibraltar Point, 24.7, 29.7 (Sykes, 2003).

1375 ***Ostrinia nubilalis*** **(Hb.) [R][I][V]**
An established resident in south-east England, recently extending its range westward and northward. The following records may be the result of internal range expansion or fresh immigration from the continent.
DORSET [**9**] East Lulworth, 25.7 (MSP, DGG); Upwey, 17.8 (PH). S. HAMPSHIRE [**11**] Hengistbury Head, 15.7, 28.7 (MJ). HERTFORDSHIRE [**20**] Ware, 8.7 (EG). BERKSHIRE [**22**] Dry Sandford, 30.6, 18.7 (AK); Fernham, 8.7, 15.7, 22.7 (SN). W. SUFFOLK [**26**] Great Cornard, 28.7 (SR). CAMBRIDGESHIRE [**29**] Monks Wood, June, undated (NG-D).

1389 ***Udea fulvalis*** **(Hb.) [I][MC]**
DORSET [**9**] Swanage, 27.7, 29.7 (EP); Weymouth, 30.7 (JMM). S. HAMPSHIRE [**11**] Hengistbury Head, 25.7 – 6.8 (7) (MJ). The VC **11** records are almost certainly the result of local breeding.

1403 ***Diasemiopsis ramburialis*** **(Dup.) [I]**
W. CORNWALL [**1**] IOS: St Agnes, 19.9, 30.9 (Hicks, 2003); IOS: St Mary's, Longstone, 20.9 (MAS); Pednavounder, The Lizard, 1.10 (SN). S. DEVON [**3**] Crownhill, Plymouth, 20.5 (JB^2); Starcross, 3.6, in Rothamsted trap (AHD). DORSET [**9**] Portland Bird Observatory, 6.10 (MC); Studland, 29.10 (GBS); Winfrith Heath, near Wool, 4.6, by day (MF). S. HAMPSHIRE [**11**] Funtley, 3.8 (MLO). W. SUSSEX [**13**] Ferring-by-Sea, 1.8 (THF); Pulborough, 9.8 (D. Fry per CRP); Walberton, 3.8 (JTR per CRP). E. SUSSEX [**14**] Heathfield, 15.8 (DRML per CRP). MIDDLESEX [**21**]

Muswell Hill, 16.8 (BP). BERKSHIRE [**22**] Fernham, 6.6, second county record (SN). MERIONETHSHIRE [**48**] Morfa Harlech, 6.8, 20.8. New to Wales (ANG, in Langmaid & Young, 2003).

1403a ***Duponchella fovealis*** **(Zell.) [I][In]**
N. SOMERSET [**6**] Burnham-on-Sea, 9.1, indoors. From the same site and source as the record in last year's report on 27.12.01 (Slade, 2002). W. SUSSEX [**13**] Walberton, 15.6, 22.10 (JTR per CRP). E. KENT [**15**] New Romney, 20.9, indoors (NF^2 per SPC). S. ESSEX [**18**] North Chingford, 24.2 (B. Pateman per BG). N. ESSEX [**19**] Dunmow, 15.2, on the outside of a lighted window (D. Perry per BG). BERKSHIRE [**22**] Earley, 14.8, first VC record (NMH, in Langmaid & Young, 2003). E. SUFFOLK [**25**] Rendham, 16.8, indoors (MD).

1408 ***Palpita vitrealis*** **(Rossi) [I]**
W. CORNWALL [**1**] Coverack, The Lizard, 24.10 (DCGB); IOS: St Agnes, 10.10 (Hicks, 2003); IOS: St Mary's, Longstone, 2.10, 3.10, 21.10, 29.10 (3) (MAS); IOS: Tresco, Borough Farm, 6.10 (AM); Lamorna Cove, 30.10 (2), 31.10 (JHC); Pednavounder, The Lizard, 10.10 (SN); The Lizard, 24.10 – 1.11 (7) (Tunmore, 2003). DORSET [**9**] Durlston, 31.10 (SN); Portland Bird Observatory, 30.9, 1.10 (MC); Preston, 8.10, 31.10 (RL); West Bexington, 22.10, 29.10, 4.11, 9.11 (RE). ISLE OF WIGHT [**10**] Bonchurch, 18.10 (JH^3). S. HAMPSHIRE [**11**] Highcliffe Castle, 29.10 (PAD); Southsea, 1.11 (JRL per IRT). W. SUSSEX [**13**] Ferring-by-Sea, 11.9, 20.9, 29.10 (2) (THF per CRP); Walberton, 23.7, 26.10 (JTR per CRP). E. SUSSEX [**14**] Peacehaven, 21.8 (CRP). E. KENT [**15**] Greatstone, 21.7 (BB); Kingsdown, 9.11 (NJ); New Romney, 8.7 (SPC). BERKSHIRE [**22**] Fernham, 31.10 (SN).

1435 ***Conobathra tumidana*** **(D. & S.) [I]**
DORSET [**9**] Durlston, 3.9 (SN). E. KENT [**15**] Greatstone, 7.8 (BB per SPC); New Romney, 14.8 (SPC); Littlestone, 15.8 (KR per SPC).

1454 ***Dioryctria abietella*** **(D. & S.) [R][I][V]**
Coastal records away from suitable habitat.
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 10.8 (MAS). E. KENT [**15**] Kingsdown, 21.5 (NJ); Lydd, 6.6, 17.7 (KR per SPC). E. NORFOLK [**27**] Eccles-on-Sea, 13.9 (Bowman, 2003).

1454b ***Dioryctria sylvestrella*** **(Ratz.) [MC][I][V]**
Now breeding locally in south-east England, with the following records likely to relate to fresh immigration or internal vagrancy.
DORSET [**9**] East Lulworth, 29.7, 6.8, 10.10 (MSP, DGG); Higher Hyde, 23.7 (PAD); Puddletown, 3.8, 8.8, 30.8 (HWH). E. SUSSEX [**14**] Peacehaven, 7.8 (CRP), first VC record. E. KENT [**15**] Greatstone, 16.7 (BB per SPC).

1458 ***Myelois circumvoluta*** **(Geoff.) [R][I/V]**
SHETLAND ISLANDS [**112**] Fair Isle, 16.6, the second record for Scotland, both from VC **112** (Pennington, 2003).

1461 ***Assara terebrella*** **(Zinck.) [R][I/V]**
E. SUSSEX [**14**] Rye Harbour, 2002, undated (Troake, 2003). E. KENT [**15**] Dungeness, 15.8 (KR per SPC); Dymchurch, 3.8 (DO'K).

1467 ***Ancylosis oblitella*** **(Zell.) [R][I/V]**
E. SUSSEX **[14]** Peacehaven, 17.8 (CRP).

1475 ***Ephestia kuehniella*** **(Zell.) [In][I]**
N.W. YORKSHIRE [**65**] Hutton Conyers, 30.9 (C.H. Fletcher, gen. det. HEB, in Langmaid & Young, 2003).

1478b ***Vitula biviella*** **(Zell.) [I][MC]**
W. KENT [**16**] Northfleet, 16.7 (DJLA, in Langmaid & Young, 2003). First VC record, breeds in the southern part of VC **15**.

PTEROPHORIDAE

1492 ***Oxyptilus laetus*** **(Zell.) [I]**
ISLE OF WIGHT [**10**] Freshwater, 15.6, first VC record (SAK-J, det. CH).

CASTNIIDAE

— ***Paysandisia archon*** **(Burmeister) [In?]**
W. SUSSEX [**13**] Bosham, 13.8 (D. Stear per MCP & SP). New to Britain. This South American species, the larvae of which are a serious pest on palm trees, is now well established on the Mediterranean coasts of Spain, France and Italy. Likely to have been imported into Britain in the larval stage within its foodplant.

PAPILIONIDAE

1539 ***Papilio machaon*** **(L.) Swallowtail [R][I][In?]**
The following record was thought to refer to continental race *gorganus* (Fruhs.).
E. NORFOLK [**27**] Eccles-on-Sea, 20.6 (Bowman, 2003).

PIERIDAE

1543 ***Colias hyale*** **(L.) /** ***alfacariensis*** **(Berger) Pale/Berger's Clouded Yellow [I]**
/44 E. SUSSEX [**14**] Cuckmere Valley, 29.9 (P. Wilson per CRP); Hastings, 25.8 (J. Goodman per CRP).

1552 ***Pontia daplidice*** **(L.) Bath White [I]**
[E. CORNWALL [**2**] An unconfirmed report from Polridmouth, near Fowey on 5.8 (C. Jepson).]

LYCAENIDAE

1567 ***Lampides boeticus*** **(L.) Long-tailed Blue [I][In]**
E. NORFOLK [**27**] Cley-next-the Sea, from 20.7, found indoors (per SN). 'Followed several similar records [of *L. boeticus*] in the county' (Insectline, 2003).

1567a ***Cacyreus marshalli*** **(Butler) Geranium Bronze [In]**
W. CORNWALL [**1**] Gwithian, 13.8, in garden (per J. Worth via SN). Believed to have been imported with *Pelargonium* plants from Spain.

NYMPHALIDAE

1583 ***Dryas julia*** **(Fabr.) Julia [In]**
S. ESSEX [**18**] Epping Forest, 29.8 (R. Cope), 1.9 (M. Shepherd); Rainham Marsh, 28.8 (R. Bashford). HERTFORDSHIRE [**20**] near Cuffley, 6.9 (A. Downie). MIDDLESEX [**21**] Liverpool Street Station, 27.8 (D. Chandler). A South American species, these records thought to be the result of a large-scale release or escape (Bashford, 2003).

1584a ***Limenitis reducta*** **(Stgr.) Southern White Admiral [In]**
S. HAMPSHIRE [**11**] Southsea, 5.8, believed to have escaped from a nearby butterfly farm (JRH).

1594 ***Aglais polychloros*** **(L.) Large Tortoiseshell [I][In?][FR]**
N. ESSEX [**19**] Mistley, 19.7 (I. Rose per BG).

1596 ***Aglais antiopa*** **(L.) Camberwell Beauty [I]**
W. CORNWALL [**1**] Porthgwarra, 16.8 (anon.). ISLE OF WIGHT [**10**] Chale Green, 28.7 (Knill-Jones, 2003). W. SUSSEX [**13**] Steyning, 6.8 (S. Hayward per CRP). E. SUSSEX [**14**] Park Corner Heath, near Lewes, 22.8 (R. Champion). E. SUFFOLK [**25**] Gunton, near Lowestoft, 7.8 (anon.); Ipswich, 9.8 (R. Parker per NB). E. NORFOLK [**27**] Acle, 12.8 (anon.); Aylmerton, near Cromer, 10.8 (anon.); Cley-next-the Sea, 15.8, found dead (per Insectline, 2003); East Dereham, 13.8 (Tennent, 2002); Norwich, 6.8 (anon.); Wells-next-the-Sea, 11.9 (anon.). BEDFORDSHIRE [**30**] Box End, near Bedford, 6.8, on bird table (P. Colbert). CAMBRIDGESHIRE [**31**] Ramsey, 8-10.9, in a greenhouse (Jones, 2003). S. LINCOLNSHIRE [**53**] Lincoln, 6.8 (I. Birch). S.E. YORKSHIRE [**61**] Skipwith Common, near Selby, 6.8 (anon.). N.E. YORKSHIRE [**62**] Yarm, 3.8, 8.8 (per NB). MID-WEST YORKSHIRE [**64**] Boroughbridge, 5.8 (per NB); Ingleborough, near Settle, 4.8 (per M. Butler via SN). S. NORTHUMBERLAND [**67**] Stobswood, 13.8 (S. Sexton). CUMBERLAND [**70**] Bowder Stone, near Keswick, 17.8 (anon.); Gosforth, 6.8, 29.8 (per NB). SHETLAND ISLANDS [**112**] Hermaness, Unst, 14.8 (Pennington, 2003).
[NORTHAMPTONSHIRE [**32**] A probable at Overstone on 15.8 (anon. per SN).]

1603 ***Issoria lathonia*** **(L.) Queen of Spain Fritillary [I]**
W. CORNWALL [**1**] Penzance, 16.8 (M. Calway per NB).
[E. SUFFOLK [**25**] Unconfirmed reports from Minsmere in early July (Insectline, 2003) and the Dunwich/Walberswick area in early October (Parfitt, 2003).]

DANAIDAE

1630 ***Danaus plexippus*** **(L.) Monarch [I][In]**
W. CORNWALL [**1**] IOS: Tresco, 29.10 (anon.); near Hayle, 12.11 (J. Wacher). PEMBROKESHIRE [**45**] Castlemorton, 26.10. (R. Ellis per NB).
W. CORK [**H3**] Dunmanaway, 7-9.6 (TM per IR), probably present from 1.6.
[DORSET [**9**] Purbeck, 8.8, an unconfirmed report (Insectline, 2003). SHETLAND ISLANDS [**112**] Fair Isle, a probable on 1.9 (Pennington, 2003).]

DREPANIDAE

1649 ***Drepana curvatula*** **(Borkh.) Dusky Hook-tip [I]**
ISLE OF WIGHT [**10**] Freshwater, 6.8 (not 8.8 as published in Knill-Jones, 2003) (DBW). E. KENT [**15**] Dungeness, 28.7 (CR per SPC); Lydd, 28.7 (KR). N. ESSEX [**19**] Kirby-le-Soken, 11.8 (PB).

GEOMETRIDAE

1664 ***Aplasta ononaria*** **(Fuessl.) Rest Harrow [R][I/V]**
E. KENT [**15**] Kingsgate, 21.6; Pegwell, 4.9; Ramsgate, 28.8, 31.8 (Solly, 2003). Most likely to refer to wanderers from the Sandwich population.

1678 ***Cyclophora puppillaria*** **(Hb.) Blair's Mocha [I]**
ISLE OF WIGHT [**10**] Freshwater, 4.9 (DBW per SAK-J).

1684 ***Scopula nigropunctata*** **(Hufn.) Sub-angled Wave [R][I/V]**
E. KENT [**15**] Charing, 16.7 (2) (SPC).

1688 ***Scopula rubiginata*** **(Hufn.) Tawny Wave [R][I]**
DORSET [**9**] Portland Bird Observatory, 18.8 (MC). N. ESSEX [**19**] St Osyth, 30.7 (RA^2 per BG).

1699 ***Idaea rusticata*** **(D. & S.) Least Carpet [R][I][V]**
E. NORFOLK [**27**] Stiffkey, 31.7 (C. Gambrill per DH).

1716 ***Rhodometra sacraria*** **(L.) Vestal [I]**
W. CORNWALL [**1**] Coverack, The Lizard, 20.10 (DCGB); IOS: St Agnes, 29.3 (MAS); October (3) (Hicks, 2003); IOS: St Mary's, Longstone, 23.6, 30.9 (3), 2.10, 4.10, 29.10 (3), 30.10 (2), 1.11 (MAS); Lamorna Cove, 29.10, 30.10, 1.11 (4) (JHC); Pednavounder, The Lizard, 30.9, 1.10, 5.10, 9.10 (SN); The Lizard, September (1), October (23), November (4) (Tunmore, 2003). S. DEVON [**3**] Abbotskerswell, 2.10 (2) (BPH). N. DEVON [**4**] Littleham, near Bideford, 7.10 (A. Henderson per RFM). S. SOMERSET [**5**] Wiveliscombe, 15.8 (PT). DORSET [**9**] Bridport, 29.10 (TB^3); Portland Bird Observatory, 1.10, 3.10 (2), 29.10 (2) (MC); Wyke Regis, 29.10 (2) (DF). ISLE OF WIGHT [**10**] 5.11 (Knill-Jones, 2003). S. HAMPSHIRE [**11**] Fareham, 31.10 (R. Dickson per IRT); Funtley, 30.5, 9.10 (MLO per IRT); Hayling Island, 13.8 (Phillips & Durnell, 2003); Portchester, 21.10 (JS); near Southampton, 23.5 (P. Budd per IRP), 3.10 (S. King per IRT); Southsea, 21.8 (2), 22.8 (JRL per IRT); Titchfield Haven NR, 7.10 (B. Duffin). N. HAMPSHIRE [**12**] Selborne, 11.10 (AA). W. SUSSEX [**13**] Ferring-by-Sea, 29.10 (THF); Kingsham, 4.8 (SP per CRP); Littlehampton, 2.10 (DCGB); Pagham, 17.6 (2) (THF per CRP); Ringmer, 2.10 (A. Batten per CRP); Walberton, 17.8, 2.10, 29.10 (JTR per CRP). E. SUSSEX [**14**] Ditchling, 18.8 (S.R. Davey per CRP); Icklesham, 17.6 (PJ); 17.8, 19.8, 1.11 (IH per CRP); Peacehaven, 19.5, 17.6, 19.8, 29.10 (CRP); Rye Harbour, 2.10 (Troake, 2003); Sharpthorne, 18.8 (PC^2). E. KENT [**15**] Dungeness, 4.8, 15.8 (DW^2, KR); Isle of Thanet, 1-28.10 (5) (Solly, 2003); Lydd, 18.8 (KR); Mersham, 12.9 (TB^2); New Romney, 13.8 (SPC); Sittingbourne, 2.8 (R.E. Lane). SURREY [**17**] Buckland, 18.8 (CH); East Sheen, Richmond, 19.8 (JH^3). S. ESSEX [**18**] Langdon Hills country park, 22.8 (2) (P. Harris per BG). HERTFORDSHIRE [**20**] Hertford, 19.8 (AW per CWP); Long Marston, 14.9 (CWP). BERKSHIRE [**22**] Dry Sandford, 12.8, 20.8, 1.11 (AK); Fernham, 18.8, 15.9 (SN); Mortimer, 2.10 (GD per IRT). BUCKINGHAMSHIRE [**24**] Slough, 2.9 (Collins, 2003); Walter's Ash, 17.6 (NF). E. SUFFOLK [**25**] Denham, 29.9 (NW). W. SUFFOLK [**26**] Nowton, undated (R.F. Eley per AWP). E. NORFOLK [**27**] Eccles-on-Sea, 24.8, 1.9 (Bowman, 2003); Scole, 11.7 (M. Hall per DH); Stoke Holy Cross, near Norwich, 22.8 (A. Musgrove). W. NORFOLK [**28**] Holme-next-the-Sea, 19.8 (PT^2). BEDFORDSHIRE [**30**] Carlton, 28.8 (H.A. Smith per LH). W. GLOUCESTERSHIRE [**34**] Oakenhill Wood, 17.8, by day (G. Meredith per RG); Severn beach, 27.7 (P. Bowerman per JMc). WARWICKSHIRE [**38**] Charlecote, 17.8 (DCGB). GLAMORGAN [**41**] Cwm Ivy, 4.10 (VS); Ty Capel, 6.10 (S&SW). ISLE OF MAN [**71**] Dhoon Maughold, 1.10 (Craine, 2003).
W. CORK [**H3**] Dursey Island, 2.6 daytime sighting (D&JS per IR). WICKLOW [**H20**] Ashford, 9.10 (AT).

1720 ***Orthonama obstipata*** **(Fab.) Gem [I][MC?]**
W. CORNWALL [**1**] Coverack, The Lizard, 20.10 (4), 21.10 (3), 22.10 (3), 23.10, 24.10 (4) (DCGB); IOS: St Agnes, March (1), April (16, including 8 on 23.4), May (10), June (17), July (35), August (21), September (15), October (25), November (4) (Hicks, 2003); IOS: St Mary's, Buzza Hill, 23.9 (per MAS); IOS: St Mary's, Hugh Town, 16.9 daytime sighting (JHC); IOS: St Mary's, Longstone, 4.3, 7.3 (2) 19.3, 2-5.4 (4), 12.4, 23.4, 5.5, 18.5, 31.5, 1.6, 7.6, 25.6, 29.6, 8.7, 15.7, 24-31.7 (18), 2-4.8 (7), 7.8, 11.8, 17.8, 18.8, 31.8, 20.9, 2-30.10 (43 – including 9 on 29.10), 2-6.11 (3), 29.11, 30.11, 25.12 (2) (MAS); IOS: Tresco, Borough Farm, 5.10 (2), 7.10, 9.10, 10.10 (2), 12.10 (AM); Lamorna Cove, 26.10 daytime sighting, 29.10 (16), 30.10 (10), 1.11 (4) (JHC); Pednavounder, The Lizard, 10.10 (2) (SN); near Penzance, 16.5 (JH); Sparnon, 30.10 (JHC); The Lizard, June (1), September (2), October (60), November (7) (Tunmore, 2003). E. CORNWALL [**2**] Eden project, Bodelva, 30.10 daytime sighting (JHC). S. DEVON [**3**] Abbotskerswell, 17.5, 1.11 (BPH); Dawlish, 29.10 (P. Franghiadi per RFM); Exminster, 6.8 (P. Franghiadi per RFM); Modbury, 31.5 – 17.10 (3) (J.C. Lidgate per RFM); Plymouth, 22.7 (JB^2 per RFM); Starcross, 9.9 – 3.11 (3) (AHD); Teignmouth, August, undated (RFM). N. DEVON [**4**] Littleham, near Bideford, 1.6 (A. Henderson per RFM). S. SOMERSET [**5**] Halse, 18.7 (JMc); Staplegrove, 19.5, 1.8, 18.8, 4.11, 9.11 (JMc); Wiveliscombe, 19.5, 22.10 (PT). DORSET [**9**] Durlston, 20.10, 31.10 (8) (SN); Gillingham, 3.8, 10.9 (GRH); Portland Bird Observatory, 18.5, 2.6, 17.8, 2.9, 3.9 (2), 11.9, 30.9, 24.10 (2), 28.10, 29.10 (10), 30.10 (5), 31.10 (9), 1.11 (7), 24.11, 28.11, plus one on an unspecified date (MC); Puddletown, 17.5 (2), 20.5 (HWH per PH); Upwey, 17.5, 2.6, 5.8 (PH); Walditch, 17.5 (MSP); Wyke Regis, 3.9, 29.10 (4) (DF). ISLE OF WIGHT [**10**] Bonchurch, 17.10 – 16.11 (12+) (JH^3); Brading Marshes NR, 21.8 (MG & JC); Freshwater, 6.6, 22.7, 3.8, 4.8, 5.8, 6.8, 7.8, 12.8 (2), 13.8, 29.8, 4.10, 4.11 (SAK-J), 15.7, 16.7, 26.7, 1.8 (3), 15.8, 28.10 (2), 16.11 (2) (DBW). S. HAMPSHIRE [**11**] Fareham, 29.7, 24.8 (R. Dickson per IRT); Funtley, 17.10, 31.10 (MLO); Havant, 15.7, 3.8 (BC per IRT); Hayling Island, 28.7, 3.8 (Phillips & Durnell, 2003); Highcliffe, 3.10 (R. Chapman per IRT); Portchester, 17.8 (JS per IRT), 4.10 (JS); Portswood, Southampton, 8.8 (AD); Sholing, Southampton, 5.9 (AC^2); Southsea, 9.7, 15.7, 28.7, 19.8, 29.9 (IRT), 21.9, 3.10 (JRL per IRT). W. SUSSEX [**13**] Ferring-by-Sea, 5.7 (2), 29.10 (3), 15.11, 17.11 (THF); Ringmer, 29.10 (A. Batten per CRP); Selsey, 17.6 - 2.10 (17) (Patton, 2003); Walberton, 18.5 – 8.6 (6), 20.7, 19.8, 30.9, 8.9, 11.9, 1.10, 8.10, 24.10 – 16.10 (16), 28.11 (2) (JTR per CRP). E. SUSSEX [**14**] Elms Farm, Icklesham, 16.8, 30.10, 1.11 (IH, PJ); Heathfield, 9.7 (DRML per CRP); Peacehaven, 14.7, 12.8, 19.8, 23.8, 1.10, 28.10, 18.11 (CRP); Rye Harbour, 23.4, 19.7, 1.8 (2), 15.8, 17.8 (2), 2.10 (PT^3 per CRP). E. KENT [**15**] Dungeness area, May (2), July (18), August (16), September (5), October (8), November (1) (Clancy, 2003); Sandwich Bay Bird Observatory, 31.10 (DW); Isle of Thanet, 24.7 – 1.11 (18) including 18.8 (2), 26.10 (2) (Solly, 2003); Kingsdown, 14.10, 30.10, 31.10 (NJ). SURREY [**17**] Buckland, 31.10 (CH); Mayford, 6.7, 27.9 (MW). S. ESSEX [**18**] Langley, 31.10 (EP); Magdalen Laver, 3.9 (TG); Maldon, 17.7 (SW); Theydon Bois, 24-26.12 (1) (TG). N. ESSEX [**19**] Kirby-le-Soken, 28.8 (PB per BG). HERTFORDSHIRE [**20**] Bishops Stortford, 7.8 (JF^2); Hertford, 30.8 (AW per CWP); Marshalls Heath, 31.8 (JM); Rothamsted Estate, 1.8 (PG); Royston, 30.10 (JC^4). BERKSHIRE [**22**] Dry Sandford, 1.11 (AK); Fernham, 6.6, 22.6, 6.8, 11.8, 31.10 (SN). E. SUFFOLK [**25**] Bawdsey 31.10, 24.11 (MD); Denham, 11.10, 29.10 (NW), 12.7 (NW per AWP); Dunwich Heath, 24.11 (MC^3); Eye, 25.7, 31.7, 5.8 (PK); Ipswich, 29.7 (NS); Landguard 1.8, 2.10, 3.10, 5.10 (MCM per AWP);

Martlesham Heath, 31.10 (SG, NS); Orfordness, 29.10 (MCM per AWP); Thorpeness, 26.7 (AWP); Weston, 31.10 (NM per AWP). W. SUFFOLK [**26**] Great Cornard, 28.7 (SR). E. NORFOLK [**27**] Eccles-on-Sea, 15.10 (Bowman, 2003); Hainford, 13.9 (DH); Scole, 23.7, 27.7 (M. Hall per DH); Weybourne, 30.10 (MP^2). W. NORFOLK [**28**] South Lopham, 24.7, 4.8 (LB-L). W. GLOUCESTERSHIRE [**34**] Pilning, 6.6 (JMc); Slimbridge, July (4 singletons during month) (N. Woodward per RG). WARWICKSHIRE [**38**] Charlecote, 22.10 (AFG per DCGB). GLAMORGAN [**41**] Bonvilston, 18.7 (R. Nottage per BS); Cardiff, 23.10 (D.R. Gilmore); Glen Moor, 4.10 (D. Painter); Gorseinon, Swansea, 28.7, 29.7 (BS); Llanbethery, 18.7 (D. Gilmore, S. Golaszewski & M. Powell per BS); Old Castle Upon Alun, 18.7 (BS & R. Smith); Penyrheol, 7.8 (BS); Ty Capel, 5.10 (S&SW). PEMBROKESHIRE [**45**] Skomer Island, 6.9, 30.10 (Darke & Hayden, 2003). MERIONETHSHIRE [**48**] Maentwrog, 25.7 (DCGB). LEICESTERSHIRE [**55**] Clipsham Quarry, 31.7 (MS); Markfield, 25.8 (AM). S. LANCASHIRE [**59**] Eccleston, St Helens, 27.7 (M. Edmondson per CD); Mere Sands Wood, 11.11 (G. Fernell, I. Kippax per SMP); Orrell, 29.7 (P. Alker per SMP); Worsthorne, 6.8 (G. Gavaghan per SMP). W. LANCASHIRE [**60**] Bispham, 4.8 (B. Brigden per SMP). ISLE OF MAN [**71**] Dhoon Maughold, 11.8; Foxdale, 5.8; Minorca, 19.6 (Craine, 2003). SHETLAND ISLANDS [**112**] Foula, 30.9 (Pennington, 2003). WICKLOW [**H20**] Ashford, 15.7, 9.10 (AT).

1853a ***Eupithecia massiliata*** **(Mill. & Dard.) Epping Pug [In]**
S. ESSEX [**18**] Epping Forest, 2.4, 13.4, new to Britain (T. Green per BG). Likely to have been introduced with *Quercus suber* imported from Portugal by the recorder (Goodey, 2003).

1871 ***Lithostege griseata*** **(D. & S.) Grey Carpet [R][V/I]**
E. NORFOLK [**27**] North Walsham, 15.6 (PH^2). W. NORFOLK [**28**] Holme-next-the-Sea, 8.6 (PT^2 per DH). N. LINCOLNSHIRE [**54**] Howdales, near Louth, 31.5, first county record (JJ). S.E. YORKSHIRE [**61**] Spurn, 7.6, first county record (C. Jones per BRS).

1885 ***Abraxas sylvata*** **(Scop.) Clouded Magpie [R][I][V]**
ISLE OF WIGHT [**10**] Binstead, 13.9 (Knill-Jones, 2003). E. SUSSEX [**14**] Elms Farm, Icklesham, 7.8 (Hunter, 2003). E. KENT [**15**] Dungeness, 28.7 (CR); Dumpton, 7.8 (Solly, 2003).

1911 ***Ennomos autumnaria*** **(Werneb.) Large Thorn [R][V/I]**
S. HAMPSHIRE [**11**] Hayling Island, 13.9 (Phillips & Durnell, 2003).

1918 ***Selenia lunularia*** **(Hb.) Lunar Thorn [R][I/V]**
E. KENT [**15**] Dungeness, 3.8 (CR per SPC); Kingsgate, 17.6 (FS).

1937b ***Peribatodes ilicaria*** **(Geyer) Lydd Beauty [I]**
E. KENT [**15**] Littlestone, 3.8 (KR per SPC). The fifth British record.
[A specimen initially identified as *P. ilicaria* from Dymchurch, Kent on 21.7 (DO'K) and reported as *P. ilicaria* in Waring *et al* (2003) was later re-identified as *Cleorodes lichenaria* (Clancy, 2006).]

1945 ***Cleorodes lichenaria*** **(Hufn.) Brussels Lace [R][I]**
E. KENT [**15**] Dymchurch 21.7 (DO'K); Greatstone, 28.7 (BB per SPC). Not known to breed in the county.

SPHINGIDAE

1972 ***Agrius convolvuli*** **(L.) Convolvulus Hawk-moth [I]**
W. CORNWALL [**1**] IOS: St Agnes, 15.8, 12.9 (3), 13.9, 19.9, 9.10 (3) (Hicks, 2003); IOS: St Mary's, Annet, 22.9 flying over sea (MAS); IOS: St Mary's, Branksea Close, 12.9 (per MAS); IOS: St Mary's, Higher Moors, 14.9 (MAS); IOS: St Mary's, Longstone, 10.8, 17.8, 3.9, 4.9, 15.9, 21.9, 30.9, 9.10 (MAS); IOS: St Mary's, Porthlow Farm, 24.8 (R. Mawr per MAS); IOS: St Mary's, Porthloo, 18.9, 19.9 (JHC, RRC); IOS: St Mary's, Rosehill, 12.10 (MAS); IOS: Tresco, Borough Farm, 7.10, 9.10 (AM); The Lizard, 13.8, 29.10 (Tunmore, 2003). S. DEVON [**3**] East Prawle, 1.8, 13.8 (MC^2). DORSET [**9**] Cheyne Weares, Portland, 19.9 (2), 20.9 (per MC); Durlston, 1.10 (DCGB); Lulworth Cove, larva found in October (MSP); Portland Bird Observatory, 13.8, 19.8, 11.9 (2), 19.9 (MC); St Alban's Head, full-grown larva, 25.9 (DC^2); West Bexington, 8.9, 15.9 (2), 16/9, 17/9 (RE). ISLE OF WIGHT [**10**] Binstead, 13.9 (Knill-Jones, 2003); Newchurch, 2.10, larva (R. Ringer per IRT). S. HAMPSHIRE [**11**] Hengistbury Head, 22.9 (MJ); Titchfield Haven NNR, 8.10 (B. Duffin). N. HAMPSHIRE [**12**] Aldershot, 4.9 found on clothing on a washing line (per MW^2). W. SUSSEX [**13**] Chichester, 27.9 (MCP per CRP); Ringmer, 30.8, 11.9 (A. Batten per CRP); Walberton, 5.9, 1.10 (JTR per CRP). E. SUSSEX [**14**] Elms Farm, Icklesham, 30.8 (IH per CRP). E. KENT [**15**] Isle of Thanet, 13.8 (Solly, 2003); Sandwich, 2.9 (IH). W. KENT [**16**] Nr. West Malling, 29.9 (D. Ferguson per IDF). N. ESSEX [**19**] Abbotts Hall Farm, 24.8 (D. Smart per BG). E. SUFFOLK [**25**] Dunwich Heath, 7.8 (2), 1.9, 4.9, 29.9, 1.10 (MC^3); Southwold, 16.9, 21.9 (LJT per AWP); Weston, 16.8 (NM per AWP). E. NORFOLK [**27**] Eccles-on-Sea, 17.8 (Bowman, 2003); Talconeston Hall, near Wymondham, 16.8 (A. Beck); Weybourne, 15.8, 10.9 (MP^2). W. NORFOLK [**28**] Holme-next-the-Sea, 16.8, 1.9 (PT^2); Hunstanton, 24.8 (per DH). MONMOUTHSHIRE [**35**] Dingestow, 14.9 (SB). WORCS [**37**] Malvern, 20.8 (DBT). GLAMORGAN [**41**] Cwm Ivy, 30.9 (VS); Ty Capel, 4.9 (S&SW). N. LINCOLNSHIRE [**54**] Gibraltar Point, 19.8, plus a second undated record (Sykes, 2003). S.E. YORKSHIRE [**61**] Kilnsea, 4.9, 11.9 (PAC), plus a larva on 5.10 (per BRS); Spurn, 22.8, 26.8, 27.8 (2) (Spence, 2003). ISLE OF MAN [**71**] Minorca, 9.9 (Craine, 2003). ORKNEY ISLANDS [**111**] 24.8, 28.8, 2.9, 3.9 (Gauld, 2003). SHETLAND ISLANDS [**112**] Eswick, 13.9 (TR); 'a few' (Pennington, 2003).

1973 ***Acherontia atropos*** **(L.) Death's-head Hawk-moth [I]**
E. SUSSEX [**14**] Chiddingly, near Hailsham, 14.8, full-grown larva (HP per CRP). DORSET [**9**] Durlston, 20.10 (SN, PAD).
DOWN [**H38**] Ballygowan, 12.9, found by day (JK per TB^4).
[A reported record from Barripper, Camborne [**1**] on 13.7 was found to be erroneous (anon., 2003).]

1985 ***Daphnis nerii*** **(L.) Oleander Hawk-moth [I][In]**
PEMBS [**45**] Morfa Common, Solva, 3.9 (MS^2 per SB). SHETLAND ISLANDS [**112**] Mossbank, 14.9, found by day (per MP^2).

1986 ***Hyles euphorbiae*** **(L.) Spurge Hawk-moth [I]**
E. KENT [**15**] Dymchurch, 3.8 (DO'K).
[DORSET [**9**] A probable specimen taken at Durlston on 4.8, but accidently released before its identity could be confirmed (R. Plowman).]

1987 ***Hyles gallii*** **(Rott.) Bedstraw Hawk-moth [I][MC]**
DORSET [**9**] West Bexington, 11.8 (RE per PH). W. SUSSEX [**13**] Chichester, 13.8 (MCP per CRP). E. SUSSEX [**14**] Elms Farm, Icklesham, 16.8 (Hunter, 2003). E. KENT [**15**] Dymchurch, 10.8 (DO'K); near Sheerness, September/October, fifteen larvae (per TS). S. ESSEX [**18**] Brentwood, 24.8 (NA per BG). N. ESSEX [**19**] Dovercourt, 19.8 (CG). E. SUFFOLK [**25**] Dunwich Heath, 31.7, 7.8, 15.8 (MC^3). W. NORFOLK [**28**] Holme-next-the-Sea, 17.8 (PT^2). N. LINCOLNSHIRE [**54**] Howdales, near Louth, 8.6 (JJ). W. LANCASHIRE [**60**] Preston, 30.7 (SMP). E. PERTHSHIRE [**89**] Kindrogan, near Pitlochry, 4.8 (PW). ARGYLL [**98**] Auchnasaul, 1.8 (BJ). ORKNEY ISLANDS [**111**] 5.8 (Gauld, 2003). SHETLAND ISLANDS [**112**] Eswick, 29.7 (TR); Lerwick, 22.6 (Pennington, 2003); Virkie, 10.8 (per MP^2).
[BEDFORDSHIRE [**30**] An unconfirmed report from New Bradwell, Milton Keynes in July (per LH).]

1990 ***Hyles livornica*** **(Esp.) Striped Hawk-moth [I]**
W. CORNWALL [**1**] Church Cove, Lizard, 22.3 (Tunmore, 2003); Cury, Lizard, 27.8 (Tunmore, 2003); Housel Bay, Lizard, 30.3 (Tunmore, 2003); IOS: St Agnes, 22.3 (2) (MEH); IOS: St Mary's, Hughtown, June, undated (per MAS); IOS: St Mary's, Longstone, 20.3, 22.5, 1.6 (MAS); Long Rock, Penzance, 3.6 (G. Littler per LO); Marazion, 22.3 (TS); near Penzance, 16.5 (3) (JH). S. DEVON [**3**] Dawlish, 27.6 (BPH); Prawle Point, 16.5 (JMc); West Hill, 30.5 (PJB). S. SOMERSET [**5**] Staplegrove, 18.5 (JMc); Wiveliscombe, 3.6 (PT). S. WILTSHIRE [**8**] West Park, near Sandleheath, 23.6 (DGG per IRT). DORSET [**9**] Blandford, by day, 24.5 (NB^2); Chickerell, Weymouth, 28.3, by day (JC^3 per PHS); Dorchester, 17.5 (JD); Durlston, 17.5 (DCGB), 27.5 (R. Plowman); East Lulworth, 18.5 (CR^2); Milton-on-Stour, 20.5, 29.5 (J. Burge per PHS); Puddletown, 17.5, 20.5, 30.5 (HWH per PH); Upwey, Weymouth, 20.5 (PH); West Bexington, 10.6, 19.6, 23.6 (RE). ISLE OF WIGHT [**10**] Binstead, 29.5 (Knill-Jones, 2003); Bonchurch, 28.3 (JH^3). S. HAMPSHIRE [**11**] Hayling Island, 7.8 (Phillips & Durnell, 2003); Sholing, Southampton, 14.6 (AC^2). W. SUSSEX [**13**] Chichester, 19.5 (MCP per CRP); Kingsham, 24.6 (SP per CRP); West Wittering, 27.6 (M. Bessant per CRP). E. SUSSEX [**14**] Beckley, 19.6 (A. Bradshaw per CRP); Elms Farm, Icklesham, 15.6 (Hunter, 2003). E. KENT [**15**] Dungeness, 31.5, 13.6, 18.6 (DW^2, CR); Dymchurch, 17.6 (DO'K); Kingsgate, 15.6, 17.6, 19.6 (Solly, 2003); Littlestone, 15.6, 8.9 (KR); Lydd-on-sea, 29.5 (RC). W. KENT [**16**] Fordcombe, 21.9 (I. Lewis per IDF). N. ESSEX [**19**] Lawford, 2.9 (A. Lansdown per BG). BERKSHIRE [**22**] Dry Sandford, 14.6 (AK). BUCKINGHAMSHIRE [**24**] Fenny Stratford, Milton Keynes, 29.5 (LH). W. NORFOLK [**28**] Brancaster, 20.6 (K. Herber per DH); Binham, 8.6 (PL). PEMBROKESHIRE [**45**] Skomer Island, 5.4 (Darke & Hayden, 2003). CAERNARVONSHIRE [**49**] Bryncelyn Hall, Lleyn Peninsula, 16.5, 6.6 (EU); Uwchmynydd, 21.6 (per EU). S.E. YORKSHIRE [**61**] Spurn, 15.7 (Spence, 2003). ISLE OF MAN [**71**] Braddan, Douglas, 17.5, by day (G. Carnock per GDC); Dhoon Maughold, 18.6 (not 18.8 as published in Craine, 2003) (LK per GDC).
E. CORK [**H5**] Fota Wildlife Park, Carrigtwohill, 8.4, the first ever specimen in a Rothamsted Insect Survey light-trap (PG).

1993 ***Hippotion celerio*** **(L.) Silver-striped Hawk-moth [I]**
DORSET [**9**] Durlston, 31.10 (SN). N.W. YORKSHIRE [**65**] Hutton Conyers, 24.10 (CF).

NOTODONTIDAE

2002 ***Notodonta tritophus*** **(D. & S.) Three-humped Prominent [I]**
E. KENT [**15**] Lydd, 3.8 (KR).

2018 ***Clostera anachoreta*** **(D. & S.) Scarce Chocolate-tip [I][FR]**
E. KENT [**15**] Lydd-on-sea, 4.8 (RC); New Romney, 6.8 (SPC).

ARCTIIDAE

2041 ***Pelosia muscerda*** **(Hufn.) Dotted Footman [R][I]**
E. SUSSEX [**14**] Elms Farm, Icklesham, 6.8 (2) (PJ). N. ESSEX [**19**] St Osyth, 19.7 (2) (RA^2).

2045 ***Eilema caniola*** **(Hb.) Hoary Footman [R][I]**
E. SUSSEX [**14**] Ditchling, 16.7 (S.R. Davey per CRP); East Grinstead, 21.8 (JHC). E. KENT [**15**] Dymchurch, 3.8, 4.8 (DO'K); Lydd, 4.8 (KR per SPC).

2051 ***Lithosia quadra*** **(L.) Four-spotted Footman [R][I][V]**
Resident populations occur widely in south-west England and southern Ireland, these probably reinforced by immigration. However records from these areas have been excluded as their origins are generally indeterminable and likely to be mainly associated with local breeding populations.
E. KENT [**15**] Littlestone, 19.6, 8.7 (KR). BERKSHIRE [**22**] Mortimer, 18.6 (GD per IRT). GLAMORGAN [**41**] Cwm Ivy, 4.9 (VS); Glen Moor, 9.8 (MB).

2054 ***Utetheisa pulchella*** **(L.) Crimson Speckled [I][In?]**
STAFFORDSHIRE [**39**] Stourbridge, late July, photographed (D. Friday, L. Southall per IK). Given the location and lack of other records of this species, possibly an accidental importation or release.

2067 ***Euplagia quadripunctaria*** **(Poda) Jersey Tiger [R][I/V]**
The following records are likely to be wanderers from resident populations.
DORSET [**9**] Culverwell, Portland, 3.9 (per MC); Durlston, 13.8 (SN); Portland Bird Observatory, 27.7, 16.8, 28.8, all daytime sightings, 14.8 (MC).

NOLIDAE

2076 ***Meganola albula*** **(D. & S.) Kent Black Arches [R][I/V]**
MIDDLESEX [**21**] Horsenden Hill, Ealing, 20.7, second VC record (RT). S.E. YORKSHIRE [**61**] Spurn, 26.7 (Spence, 2003).

2079 ***Nola aerugula*** **(Hb.) Scarce Black Arches [I]**
E. SUSSEX [**14**] Camber, 18.7, flushed by day (DB per CRP).

NOCTUIDAE

2102a ***Ochropleura leucogaster*** **(Frey.) Radford's Flame Shoulder [I]**
W. CORNWALL [**1**] IOS: St Agnes, 29.10 (MEH); Pednavounder, The Lizard, 12.10 (SN). DORSET [**9**] Puddletown, 30.10 (HWH).

2137 ***Eurois occulta*** **(L.) Great Brocade [R][I]**
FIFESHIRE [**85**] Tentsmuir NNR, near Tayport, 2.8 (NL). S. ABERDEENSHIRE [**92**] Bucksburn, 6.8 (BP^2). W. SUTHERLAND [**108**] Inchnadamph, 17.8 (NL). ORKNEY ISLANDS [**111**] 6.8 (Gauld, 2003). SHETLAND ISLANDS [**112**] Eswick, 5.8, 6.8, 11.8 (Pennington, 2003). All examples of the pale continental form.

2183 ***Orthosia miniosa*** **(D. & S.) Blossom Underwing [R][I/V]**
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 23.4 (2), new to IOS (MAS). ISLE OF WIGHT [**10**] Binstead, 3.4 (Knill-Jones, 2003). W. SUSSEX [**13**] Kingsham, 14.4 (SP).

2194 ***Mythimna albipuncta*** **(D. & S.) White-point [R][I]**
An established resident within the southern and eastern seaboard counties between Dorset [**9**] and East Suffolk [**25**], and records are only listed from outside this area.
W. CORNWALL [**1**] IOS: St Agnes, June (1), September (2) (Hicks, 2003); IOS: St Mary's, Longstone, 28.6, 30.6, 11.7, 15.7, 3.9 (MAS); The Lizard, 22.9 (Tunmore, 2003). N. DEVON [**4**] Bideford, July, undated (M. Glover per RFM). HERTFORDSHIRE [**20**] Bishops Stortford, 24.9 (AP per CWP). E. NORFOLK [**27**] Eccles-on-Sea, 15.8 (Bowman, 2003); Scole, 9.6, 26.8, 31.8 (M. Hall per DH); Stoke Holy Cross, near Norwich, 22.8 (A. Musgrove). W. NORFOLK [**28**] South Lopham, 12.9 (LB-L). FLINTSHIRE [**51**] Hawarden, 21.8 (G. Neal).

2202 ***Mythimna l-album*** **(L.) L-album Wainscot [R][I]**
An established resident within the southern seaboard counties between West Cornwall [**1**] and East Kent [**15**], and records are only listed from outside this area.
E. SUFFOLK [**25**] Dunwich, early October (1) (Odin, 2003); Landguard Bird Observatory, early October (1) (Odin, 2003); Orfordness, early October (1) (Odin, 2003).

2208 ***Mythimna loreyi*** **(Dup.) Cosmopolitan [I]**
W. CORNWALL [**1**] IOS: St Agnes, 29.10. 30.10 (MEH); IOS: St Mary's, Longstone, 28.8, 24.10, 27.10, 28.10, 29.10 (2), 30.10, 31.10, 1.11, 6.11 (MAS); Lamorna Cove, 29.10, 31.10 (2), 1.11 (JHC); Porthgwarra, 30.10 (JHC); The Lizard, 29.10 (3), 30.10 (3), 4.11 (2) (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory, 29.10 (MC); Puddletown, 1.10 (HWH); Swanage, 29.10 (RC^2).
WATERFORD [**H6**] Tramore, 30.10 (T. Bryant).

2209 ***Mythimna flammea*** **(Curtis) Flame Wainscot [R][I/V]**
ISLE OF WIGHT [**10**] Binstead, 19.5 (Knill-Jones, 2003).

2233 ***Lithomoia solidaginis*** **(Hb.) Golden-rod Brindle [R][I]**
SHETLAND ISLANDS [**112**] Eswick, 22.8 (Pennington, 2003). Second VC record.

2240 ***Lithophane leautieri hesperica*** **(Bours.) Blair's Shoulder-knot [R][V/I]**
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 2.11 (MAS). Second IOS record. ISLE OF MAN [**71**] Dhoon Maughold, 1.10, 4.10, 5.10 (2), 12.10, 14.10; Minorca, 1.10 (8) (GDC).
WICKLOW [**H20**] Ashford, 4.11 (AT); near Wicklow Town, 5.10 (MO'D). New to Ireland.

2241 ***Xylena vetusta*** **(Hb.) Red Sword-grass [R][I][V]**
DORSET [**9**] Durlston, 22.12 (SN, PAD); East Lulworth, 7.3 (DGG, MSP), 20.3 (MP); Milborne Wood, 30.11 (HWH); Milton-on-Stour, 8.10 (JB); Puddletown, 25.2 (HWH); Slepe Heath, 21.3 (DC); Morden Bog, 25.4 (2) (PAD).

2251 ***Trigonophora flammea*** **(Esp.) Flame Brocade [I][FR]**
DORSET [**9**] Portland Bird Observatory, 29.10 (MC); Wyke Regis, 29.10 (DF). ISLE OF WIGHT [**10**] Bonchurch, 10.10, 11.10 (JH^3); Ventnor, 27.10 (Knill-Jones, 2003).

2287 ***Acronicta auricoma*** **(D. & S.) Scarce Dagger [I]**
E. KENT [**15**] Dungeness, 3.8 (MD, LG).

2292 ***Cryphia algae*** **(Fab.) Tree-lichen Beauty [I][MC]**
S. HAMPSHIRE [**11**] Hayling Island, 27.7 (Phillips & Durnell, 2003); Southsea, 26.8 (JRL). E. SUSSEX [**14**] Rye Harbour, 3.8 (Troake, 2003). E. KENT [**15**] Kingsgate, 12.8, 15.8 (Solly, 2003); Littlestone, 14.8 (KR); Ramsgate, 28.7, 3.8 (Solly, 2003). W. KENT [**16**] Barnehurst, 28.7 (2), 10.8, 16.8, 23.8 (TS); Dartford, 30.7 (BKW).

2304 ***Trachea atriplicis*** **(L.) Orache Moth [I][FR]**
S. DEVON [**3**] West Hill, near Ottery St Mary, 4.8 (PJB). N. HAMPSHIRE [**12**] Northwood Park, near Sparsholt, 11.7 (RAB). E. SUFFOLK [**25**] Landguard Bird Observatory, 18.7 (Odin, 2003).

2097 ***Actinotia polyodon*** **(Clerck) Purple Cloud [I]**
E. KENT [**15**] New Romney, 28.5 (NF^2 per SPC). This is the correct date for this record, not 23.5 as stated in Clancy (2003) and elsewhere.

2313 ***Enargia paleacea*** **(Esp.) Angle-striped Sallow [R][I]**
FERMANAGH [**H33**] Legetillida, 7.8, new to Ireland. (V. McLoughlin).

2357 ***Amphipoea lucens*** **(Frey.) Large Ear [R][I]**
E. KENT [**15**] Dungeness, 9.8 (CR per SPC); Lydd, 8.8 (KR per SPC); New Romney, 14.8 (KR per SPC). Nine examples have now been taken in this area, assumed to be immigrants.

2373 ***Archanara sparganii*** **(Esp.) Webb's Wainscot [R][I/V]**
S.E. YORKSHIRE [**61**] Spurn, 7.8 – 13.8 (5), first county records (Spence, 2003).

2385 ***Spodoptera exigua*** **(Hb.) Small Mottled Willow [I]**
W. CORNWALL [**1**] Coverack, The Lizard, 24.10 (2) (DCGB); IOS: St Agnes, 30.9 (3), 9.10, 29.10 (Hicks, 2003); IOS: St Mary's, Longstone, 7.6, 1.8, 8.8, 18.8, 1.10, 29.10, 30.10 (MAS); The Lizard, 15.10, 24.10 (Tunmore, 2003). S. DEVON [**3**] Exeter, 18.7 (PNB per RFM). S. SOMERSET [**5**] Halse, 17.5 (2) (JMc); Heliar's Copse, 2.6 (JMc); Stoke sub Hamdon, 16.5 (M. Yeates); Wiveliscombe, 17.5 (2) (PT). DORSET [**9**] Bothenhampton, 7.7 (DW^3); Dorchester, 17.5, 19.5, 1.6 (JD); Down Farm, 17.5 (2) (MJ); East Lulworth, 6.6 (DGG, MSP); Portland Bird Observatory, 17.5 (2), 3.6, 4.6, 19.6, 28.7 (2), 29.7, 26.8, 27.9, 1.11 (MC); Puddletown, 17.5 (2), 18.5 (4), 20.5 (HWH). Shapwick, 17.5 (2) (PAD); Trigon, 17.6, 4.8 (CM); Upwey, 17.5, 2.6 (PH); Walditch, 17.5, 18.5, 29.10 (MSP); West Bexington, 20.5, 26.7, 27.7 (RE); Wimborne, 6.6 (MG^2); Wyke Regis, 30.7, 30.8 (DF). S. HAMPSHIRE [**11**] Southsea, 2.8 (JRL per IRT). W. SUSSEX [**13**] Chichester 21.6, 27.8, 8.9 (2), 17.9, 19.9, 23.10 (MCP per CWP); Kingsham, 14.8 (SP); Pagham, 22.8 (AMD per CRP); Walberton, 14.6, 2.8 (JTR per CRP). E. SUSSEX [**14**] Elms Farm, Icklesham, 14.6, 15.6, 11.9 (Hunter, 2003), 13.8, 14.8 (PJ); Heathfield, 18.8 (DRML per CRP); Rye Harbour, 16.6 (Troake, 2003). E. KENT [**15**] Dungeness, 16.8, 4.9 (CR, DW^2); Greatstone, 7.8 (BB); Isle of Thanet, 17-24.6 (3) (Solly, 2003); Littlestone, 3.8 (KR); Mersham, 22.9 (TB^2); New Romney, 3.8, 8.8, 15.8 (2), 16.8, 20.8 (KR, SPC). HERTFORDSHIRE [**20**] Bishops Stortford, 26.6 (JF^2); Long Marston, 6.6 (2) (PB^2). BERKSHIRE [**22**] Fernham, 2.6, 3.8 (SN); Mortimer, 7.8 (GD per IRT). E. SUFFOLK [**25**] Denham, 2.8 (PK), 15.8 (NW per AWP). BEDFORDSHIRE [**30**] Cockayne Hatley, 30.7 (I.P. Woiwood per LH). WORCESTERSHIRE [**37**] Stourport-on-Severn, 1.6 (M. Southall). ISLE OF MAN [**71**] Dhoon Maughold, 12.10 (Craine, 2003).

2387a ***Platyperigea kadenii*** **(Frey.) Clancy's Rustic [I]**
E. KENT [**15**] New Romney, 3.10, new to Britain (Clancy & Honey, 2003).

2400 ***Helicoverpa armigera*** **(Hb.) Scarce Bordered Straw [I][In]**
W. CORNWALL [**1**] IOS: St Agnes, 23.3 (2) (Hicks, 2003); IOS: St Mary's, Longstone, 11.4, 2.10, 3.10, 29.10 (2), 30.10 (MAS); Lamorna Cove, 29.10, 30.10 (JHC); Mullion, 18.9 (Collins, 2003); The Lizard, 18.9, 19.9, 30.9 (2) (Tunmore, 2003). DORSET [**9**] Portland, 17.8 (RRC *et al*); Portland Bird Observatory, 18.8, 27.8, 11.9, 23.9, 29.10, 30.10 (4), 31.10, 25.11 (MC); Shapwick, 31.10 (PAD); West Bexington, 2.10, 29.10 (2), 4.11 (RE). ISLE OF WIGHT [**10**] Freshwater, 29.10, 15.11 (SAK-J). S. HAMPSHIRE [**11**] Southsea, 23.7, 5.9, 8.9 (IRT). W. SUSSEX [**13**] Pagham, 28.9 (THF per CRP); Walberton, 24.10 (JTR per CRP). E. SUSSEX [**14**] Peacehaven, 2.10, 5.10 (CRP). E. KENT [**15**] Isle of Thanet, 17.6 – 5.11 (8) (Solly, 2003); Kingsdown, 9.9 (NJ). E. SUFFOLK [**25**] Dunwich Heath, 2.10 (MC^3).
WATERFORD [**H6**] Tramore, 1.10 (T. Bryant). WICKLOW [**H20**] near Wicklow Town, 5.10 (MO'D).
WESTMORLAND [**69**] Grange-over-Sands, 10.2, larva indoors. Likely to have been associated with imported flowers, adult reared 7.4 (Birkett, 2002).

2403 ***Heliothis peltigera*** **(D. & S.) Bordered Straw [I]**
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 3.4, 4.4, 14.4, 1.6, 3.6, 5.6, 21.6, 24.10 (MAS); Mullion, Lizard, 15.9, 19.9 (Tunmore, 2003); at sea between Penzance & IOS, June, undated (per MAS). E. CORNWALL [**2**] Torpoint, 10.6 (L. Truscott). S. SOMERSET [**5**] Staplegrove, 14.9 (JMc). DORSET [**9**] Ashington, 5.9 (JF); Cheyne Weare, Portland, 4.8 (MD, LG); Dorchester, 18.6, by day (PH); Portland Bird Observatory, 17.6, 16.9 (MC); Puddletown, 15.9 (HWH); Seacombe, 17.8 (CM); Upwey, 3.6, 4.6 (PH); Walditch, 18.9 (MSP); West Bexington, 4.8, 12.8, 24.8, 3.9, 11.9, 13.9 (2), 19.9, 20.9 (RE); Wool, 16.6 (DC); Wyke Regis, 26.8, 30.8 (DF); Upwey, 3.6 (PH). ISLE OF WIGHT [**10**] Freshwater, 25.8 (SAK-J); approximate Island total – 3 (Knill-Jones, 2003). S. HAMPSHIRE [**11**] Funtley, 18.6, 7.9 (MLO per IRT); Hayling Island, 24.6, by day (SP); Highcliffe, 22.6 (R. Chapman per IRT); Portchester, 30.5, 31.5, 1.9 (JS per IRT); Sholing, Southampton, 4.10 (AC^2); Southsea, 1.7 (IRT), 4.9 (JRL per IRT). N. HAMPSHIRE [**12**] Overton, 9.7 (P. Hutchins per IRT); Selborne, 24.6 (AA). W. SUSSEX [**13**] Chichester, 7.6 – 30.8 (3) (MCP *in* Patton, 2003); Church Norton, 31.7 (P. Bennett per CRP); Ferring-by-Sea, 20.6, 13.9 (THF); Pagham, 17.6 (2) (THF); Pulborough, 20.6 (D. Fry per CRP); Ringmer, 22.6 (A. Batten per CRP); Walberton, 19.6 (2), 3.9 (JTR per CRP). E. SUSSEX [**14**] Crawley Down, 13.9 (JHC); Eastbourne, 2.9 (R. Meller per CRP); Elms Farm, Icklesham, 21.6 (2), 23.8 (IH per CRP); Heathfield, 20.6 (DRML per CRP); Peacehaven, 17.6 (2), 18.6, 20.6, 27.6, 29.8 (CRP); Rye Harbour, larvae found on Sticky Groundsel *Senecio viscosus*, undated (Troake, 2003). E. KENT [**15**] Boughton under Blean, 21.6 (P. Maton per IDF); Deal, 27.6 (2), by day (SPC); Dungeness area, May (1), June (41), July (2), August (11), September (4) (Clancy, 2003), larvae plentiful on Sticky Groundsel *Senecio viscosus* at Dungeness in July (SPC); Dymchurch, undated (DO'K); Isle of Thanet, 16.6 – 4.9 (33 including seven on 17.7) (Solly, 2003); Kingsdown, 18.6 (2), 20.6 (2), 24.6 (NJ); Ruckinge, 21.6 (B. Boothroyd per SPC); Sandwich, 18.6, 24.6, 8.8, 10.8 (D. Batchelor per IDF), 23.6 (FS), 4.7, by day (SPC), 16.8 (J. Platts per IDF); Stodmarsh, 25.6 (J. Platts per IDF). W. KENT [**16**] Grain, 12.8 (AGJB); Gravesend, 17.6 (DJLA); Tonbridge, 13.9 (K. Palmer per IDF); Tunbridge Wells, 28.6 (K. Palmer per IDF).

SURREY [**17**] Buckland, 18.6 (Collins, 2003). S. ESSEX [**18**] Chingford, 20.6 (R. Cope); near Harlow, 17.8 (TG); Langley, 18.8 (EP); Loughton, 21.8 (R. Barfoot per BG). N. ESSEX [**19**] Boreham, 6.9, 7.9 (2) (G. Ekins); Dovercourt, 18.6, 5.9 (CG); Kirby-le-Soken, 24.6 (PB); Jaywick, 22.8 (J. Young per BG); Lawford, 5.7 (A. Lansdown per BG); Salcott, 27.6, 26.7 (G. Catchpole per BG). HERTFORDSHIRE [**20**] Bishops Stortford, 9.6 (AH per CWP); Hemel Hempstead, 1.6 (MN per CWP); Hertford, 25.6 (AW per CWP); Long Marston, 6.7 (PB^2 per CWP); Quickswood, 17.6 (DH^2 per CWP); Wheathampstead (TDC per CWP). BERKSHIRE [**22**] Dry Sandford, 29.6 (AK); Fernham, 20.6, 16.9 (SN); Mortimer, 18.6 (GD per IRT). BUCKINGHAMSHIRE [**24**] Slough, 20.6 (Collins, 2003). E. SUFFOLK [**25**] Dunwich Heath, 19.8, 29.8 (2) (MC^3); East Bergholt, 31.8 (J. Levene per AWP); near Needham Market, 26.6 (AWP); Orfordness, 17.8 (MCM per AWP); Rendham, 19.6, 3.9 (MD); Rushmere St Andrew, 20.6 (JBH). W. SUFFOLK [**26**] Elveden, 22.6 (per AWP); Nowton, undated (R.F. Eley per AWP). E. NORFOLK [**27**] Eccles-on-Sea, 17.8, 19.8 (Bowman, 2003); Hainford, 21.6 (DH); Filby, 27.7, six larvae on *Calendula* spp. (K. Saul per DH); Stoke Holy Cross, near Norwich, 20.8 (A. Musgrove); Weybourne, 18.8 (MP^2). CAMBRIDGESHIRE [**29**] Trumpington, 19.8 (H. Slatter). E. GLOUCESTERSHIRE [**33**] Bishop's Cleeve, 25.6 (A. Moir). WARWICKSHIRE [**38**] Charlecote, 28.6 (DCGB); Rugby, 9.9 (I. Reid per DCGB). LEICESTERSHIRE [**55**] Evington, Leicester, 17.6 (A. Russell per SN); Markfield, 13.9 (AM). S.E. YORKSHIRE [**61**] Spurn, 3.6, 11.9 (Spence, 2003). BANFFSHIRE [**94**] Ordiquhill, 26.8 (by day), first VC record (Palmer *et al*, 2006). SHETLAND ISLANDS [**112**] Eswick, 13.9; Fair Isle, 9.9 (Pennington, 2003).
WICKLOW [**H20**] near Ashford, 29.5, by day (AT).

2405 ***Schinia scutosa*** **(D. & S.) Spotted Clover [I]**
E. SUFFOLK [**25**] Denham, near Eye, 6.9 (NW).

2418 ***Earias clorana*** **(L.) Cream-bordered Green Pea [R][I/V]**
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 16.7, 24.7, both ab. *flavimargo* (MAS).

2423 ***Nycteola asiatica*** **(Krul.) Eastern Nycteoline [I]**
E. SUFFOLK [**25**] Landguard Bird Observatory, 16.9 (NO, det. AMD). S.E. YORKSHIRE [**61**] Spurn, 11.9 (BRS, det. HEB). The third and fourth British records - in the light of these two records, two additional specimens were retrospectively identified as this species (see Appendix 1).

2428 ***Chrysodeixis chalcites*** **(Esp.) Golden Twin-spot [I][In][MC?]**
DORSET [**9**] Wyke Regis, 26.8 (DF). E. KENT [**15**] Dumpton, 18.8, 23.8; Kingsgate, 30.7, 30.9 (Solly, 2003); Kingsdown, 7.10 (J. Platts); New Romney, 1.10 (SPC); Pegwell, 1.11; Ramsgate, 25.7, 30.7, 2.9, 16.9, 1.11 (Solly, 2003). N. ESSEX [**19**] Kirby-le-Soken, 3.9 (PB); Wix, 11.10 (CSB). E. NORFOLK [**27**] North Walsham, 19.9 (PH^2).
W. NORFOLK [**28**] Thetford, 16.8, pupa found within a cocoon on a cultivated ivy in a garden centre, the moth bred on 22.8 (Haggett, 2002).

— ***Chrysodeixis eriosoma*** **(Doubl.) [In]**
S. HAMPSHIRE [**11**] Brockenhurst, October, larva in purchased chrysanthemums, adult bred on 1.11. New to Britain (A. Butterworth, AJP, in Pickles, 2005). Exhibited in error as *Chrysodeixis acuta* (Walk.) at the 2002 B.E.N.H.S Exhibition (Collins, 2003).

2432 ***Trichoplusia ni*** **(Hb.) Ni Moth [I]**
W. CORNWALL [**1**] The Lizard, 29.10 (Tunmore, 2003). DORSET [**9**] Durlston, 3.9 (SN); Portland Bird Observatory, 3.9 (MC); Puddletown, 7.8 (HWH); Wyke Regis, 21.8 (DF). ISLE OF WIGHT [**10**] Bonchurch, 6.8 (JH^3). N. HAMPSHIRE [**12**] Selborne, 20.6 (AA per IRT). W. SUSSEX [**13**] Ferring-by-Sea, 27.8 (THF). E. SUSSEX [**14**] Rye Harbour, 29.8 (Troake, 2003). E. KENT [**15**] Dymchurch, 24.8, 27.8, 29.8 (DO'K); Greatstone, 23.8, 25.8, 2.9 (BB); Kingsgate, 26.8 (Solly, 2003); Littlestone, 23.8, 29.8 (KR); Lydd, 16.8, 18.8, 21.8, 26.8, 31.8 (2), 3.9 (KR); New Romney, 21.6, 19.8, 22.8 (SPC); Northward Hill, 16.8 (AGJB per IDF); Ramsgate, 2.9 (Solly, 2003). W. KENT [**16**] Orpington, 29.8 (M. Jordan per IDF). S. ESSEX [**18**] Langley, 21.10 (EP). N. ESSEX [**19**] St Osyth, 28.8 (RA^2 per BG). E. SUFFOLK [**25**] Landguard Bird Observatory, 22.8 (Odin, 2003). E. NORFOLK [**27**] North Walsham, 23.8 (PH^2). N. LINCOLNSHIRE [**54**] Gibraltar Point, 30.8 (Sykes, 2003).

2433 ***Thysanoplusia orichalcea*** **(Frey.) Slender Burnished Brass [I][In]**
W. CORNWALL [**1**] Crowlas, 10.11, found dead (SJB).

2436 ***Macdunnoughia confusa*** **(Steph.) Dewick's Plusia [I][In]**
S. DEVON [**3**] Exeter, 16.8 (PNB). W. SUSSEX [**13**] Walberton, 10.5, the earliest British record (JTR per CRP). E. KENT [**15**] New Romney, 16.9 (SPC). E. SUFFOLK [**25**] Rendham, 15.8 (MD). BRECONSHIRE [**42**] Pennorth, Brecon, 16.8, indoors (A. King per SN). S.E. YORKSHIRE [**61**] Rudston, 12.9 (TE). SHETLAND ISLANDS [**112**] Eswick, 13.9 (Pennington, 2003).

2437 ***Polychrysia moneta*** **(Hübn.) Golden Plusia [R][I/V]**
S.E. YORKSHIRE [**61**] Spurn, 27.6 (Spence, 2003).

2445 ***Megalographa biloba*** **(Steph.) Stephens' Gem [I][In?]**
W. CORNWALL [**1**] IOS: St Mary's, Longstone, 9.7 (MAS). GLAMORGAN [**41**] Cwm Ivy, Gower, 20.9 (VS per BS). The fourth and fifth British records. Another American species, *Agrius cingulata* was taken at Baixo Alentejo, Portugal, on 20.9 (per BFS).

2451 ***Catocala fraxini*** **(L.) Clifden Nonpareil [I][FR]**
E. NORFOLK [**27**] East Tuddenham, 27.8 (AB^2); Eccles-on-Sea, 6.9 (Bowman, 2003); Kelling, 27.8 (BD); Weybourne, 28.8 (2) (MP^2). WARWICKSHIRE [**38**] Redditch, 14.9 (AFG). S. ABERDEENSHIRE [**92**] Glen Muick, near Ballater, 28.8 (H. Gardiner per NL). SHETLAND ISLANDS [**112**] Eswick, 24.8 (Pennington, 2003).

2455a ***Catocala nymphagoga*** **(Esp.) Oak Yellow Underwing [I]**
MIDDLESEX [**21**] Buckingham Palace garden, 3/4.9, third British record (Honey, 2002).

2475 ***Parascotia fuliginaria*** **(L.) Waved Black [R][I/V]**
E. SUFFOLK [**25**] Landguard Bird Observatory, 3.8 (Odin, 2003). NOTTINGHAMSHIRE [**56**] Misson Carr, 17.8, first VC record (Collins, 2003).

2474 ***Rivula sericealis*** **(Scop.) Straw Dot [R][I/V]**
ISLE OF WIGHT [**10**] Freshwater 6.8 (20), 7.8 (15) (DBW). S.E. YORKSHIRE [**61**] Spurn, 10.8, 18.8, 24.8 (Spence, 2003).

2476 ***Hypena crassalis*** **(Fab.) Beautiful Snout [R][I/V]**
HERTFORDSHIRE [**20**] near Bishops Stortford, 29.6 (Plant, 2002); Hertford, 7.7 (AW, in Plant, 2002). Third and fourth VC records.

2478 ***Hypena obsitalis*** **(Hb.) Bloxworth Snout [R][V/I]**
DORSET [**9**] Portland, 16.3, 5.8, 3.10 (MC).

2479 ***Hypena obesalis*** **(Treit.) Paignton Snout [I]**
N. SOMERSET [**6**] Timsbury, near Bath, 21.9, fourth British record (MB).

2495 ***Trisateles emortualis*** **(D. & S.) Olive Crescent [R][I]**
ISLE OF WIGHT [**10**] Bonchurch, 19.6, second VC record (JH^3).

ANNEX 2: SELECTED RECORDS OF COMMONER SPECIES IN 2002

YPONOMEUTIDAE

0464 ***Plutella xylostella*** **(L.) [R][I]**
Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes - 4559 (Hicks, 2003); IOS: St Mary's, Longstone - 395 (MAS). DORSET [**9**] Portland Bird Observatory - 2250 (MC). S. HAMPSHIRE [**11**] Southsea – 254 (IRT). W. SUSSEX [**13**] Selsey – 399 (Patton, 2003). E. SUSSEX [**14**] Peacehaven – 290 (CRP). E. KENT [**15**] Dungeness area – 1271 at three sites (Clancy, 2003); Isle of Thanet – 4863 at two sites (Solly, 2003). HERTFORDSHIRE [**20**] Hertford – 91 (AW per CWP). BERKSHIRE [**22**] Fernham – 280 (SN). E. NORFOLK [**27**] Eccles-on-Sea – 1197 (Bowman, 2003).
Ealiest dates: W. CORNWALL [**1**] Church Cove, Lizard, 22.3 (Tunmore, 2003); IOS: St Agnes, March (2), undated (Hicks, 2003).
Latest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 24.12 (MAS). DORSET [**9**] Portland Bird Observatory, 22.12 (MC); Durlston, 22.12 (4) (SN). E. KENT [**15**] Kingsgate, 29.12 (FS).
Large single night counts: W. CORNWALL [**1**] IOS: St Agnes, 12.9 (c2800 in two traps) (Hicks, 2003). S. SOMERSET [**5**] Halse, 17.5 (304) (JMc). DORSET [**9**] Portland Bird Observatory, 4.9 (339) (MC); Puddletown 17.5 (225) (HWH per PH). E. KENT [**15**] Kingsgate, 30.7 (1242), 7.8 (319) (FS per IDF); Sandwich, 15.7 (500) (FS per IDF). E. SUFFOLK [**25**] Landguard Bird Observatory, 29.7 (c1145) (Odin, 2003). E. NORFOLK [**27**] Eccles-on-Sea, 4.8 (324) (Bowman, 2003). S.E. YORKSHIRE [**61**] Spurn, 11.9 (83) (Spence, 2003). N.E. YORKSHIRE [**62**] Skelton, near Guisborough, 6.8 (120) (TB).
Large diurnal counts: W. CORNWALL [**1**] Black Head, Lizard, 14.9 (c50 per m^2) (Tunmore, 2003); IOS: St Mary's, Carn Morval Point, 16.9, abundant (JHC); IOS: St Mary's, Higher Moor, 14.9 (c1000) (MAS); IOS: St Mary's Longstone, 13.9 (c3500), 14.9 (c1000) (MAS). E. NORFOLK [**27**] Winterton-on-Sea, 10.8 (1000+) (DH). W. NORFOLK [**28**] Scolt head, 8.8 (c1800) (JC). S.E. YORKSHIRE [**61**] Spurn, 'hundreds' from 31.7 (Spence, 2003). N.E. YORKSHIRE [**62**] Kettleness Point, 3.8 (300+) (TB). ISLE OF MAN [**71**] Ballaghennie, 'hundreds', 16.9 (GDC).
Most northerly records: ORKNEY ISLANDS [**111**] 19.7 – 15.9 (small numbers with a peak of ten on 11.9 (Gauld, 2003).

PYRALIDAE

1395 ***Udea ferrugalis*** **(Hb.) [I]**
Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes - 1085 (Hicks, 2003); IOS: St Mary's, Longstone - 2438 (MAS); The Lizard – 679 at three sites

(Tunmore, 2003). DORSET [**9**] Portland Bird Observatory - 729 (MC). ISLE OF WIGHT [**10**] Freshwater – 110 from two sites (SAK-J, DBW); approximate Island total – 250 (Knill-Jones, 2003). W. SUSSEX [**13**] Selsey – 166 (Patton, 2003). E. KENT [**15**] Dungeness area – 159 at seven sites (Clancy, 2003); Isle of Thanet – 83 at four sites (Solly, 2003). PEMBROKESHIRE [**45**] Skomer Island – 55 (Darke & Hayden, 2003).

Ealiest dates: W. CORNWALL [**1**] IOS: St Agnes, January, undated (Hicks, 2003); DORSET [**9**] Portland Bird Observatory, 16.3 (MC).

Latest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 21.12 (2), 22.12, 24.12 (MAS); The Lizard, 29.12 (Tunmore, 2003). DORSET [**9**] Durlston, 22.12 (8) (SN). S. HAMPSHIRE [**11**] Portchester, 22.12 (JS). W. SUSSEX [**13**] Kingsham, 22.12 (SP). E. KENT [**15**] Kingsgate, 23.12 (FS).

Large single night counts: W. CORNWALL [**1**] Church Cove, Lizard, 29.10 (195) (MT); IOS: St Agnes, 9.10 (500) (Hicks, 2003); IOS: St Mary's, Longstone, 9.10 (148), 10.10 (155), 29.10 (170), 30.10 (287) (MAS).

Most northerly records: S.E. YORKSHIRE [**61**] Spurn, 20.8, 11.9, 29.10 (Spence, 2003).

Selected inland records: N. HAMPSHIRE [**12**] Basingstoke, 8.9, 24.10 (M. Wall per IRT); Greywell, 26.7, 19.8 (2), 29.10 (P. Boswell per IRT); Selborne, 5.7 – 3.12 (24) (AA); Sherborne St John, 21.8 (2), 26.8, 29.8 (2) (N. Montegriffo per IRT). HERTFORDSHIRE [**20**] Hertford, 19.8 – 22.10 (6) (AW per CWP). BERKSHIRE [**22**] Fernham, until 22.11 (23) (SN); Mortimer, 16.8 (GD per IRT). E. SUFFOLK [**25**] Denham, 22.8 – 11.9 (4) (NW per AWP); Eye, 5.9 (PK per AWP). W. SUFFOLK [**26**] Long Melford, 10.9 (DU per AWP); Thurston, 4.10 (PB^3 per AWP). WARWICKSHIRE [**38**] Pillerton Priors, 12.11 (C. Ivin per SN).

Immature stages: W. CORNWALL [**1**] Mousehole beach, 3.10, pupa (SN). S. DEVON [**3**] Prawle Point, 23.9, larva on *Pulicaria dysenterica*, adult reared (BPH).

1398 ***Nomophila noctuella*** **(D. & S.) [I]**

Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes - 2761 (Hicks, 2003); IOS: St Mary's, Longstone - 1803 (MAS); The Lizard – 190 at three sites (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory - 1514 (MC). ISLE OF WIGHT [**10**] Freshwater – 97 from two sites (SAK-J, DBW); approximate Island total – 200 (Knill-Jones, 2003). W. SUSSEX [**13**] Selsey – 441 (Patton, 2003). E. SUSSEX [**14**] Peacehaven – 295 (CRP); Elms Farm, Icklesham – 188 (Hunter, 2003). E. KENT [**15**] Dungeness area – 369 at seven sites (Clancy, 2003); Isle of Thanet – 185 at four sites (Solly, 2003).

Ealiest dates: W. CORNWALL [**1**] IOS: St Agnes, March, undated (Hicks, 2003); IOS: St Mary's, Green Farm, 26.3 (MAS). DORSET [**9**] Portland Bird Observatory, 30.3 (MC).

Latest dates: DORSET [**9**] Portland Bird Observatory, 29.11 (MC). W. CORNWALL [**1**] IOS: St Mary's, Longstone, 28.11 (MAS). E. KENT [**15**] Kingsgate, 26.11 (FS). BERKSHIRE [**22**] Fernham, 16.11 (SN).

Large single night counts: W. CORNWALL [**1**] IOS: St Agnes, 9.10 (2000) (Hicks, 2003); IOS: St Mary's, Longstone, 2.10 (206), 9.10 (130), 10.10 (195) (MAS); IOS: Tresco, 10.10 (100) (AM); Porthallow, 7.6 (100+) (JS). DORSET [**9**] Portland Bird Observatory, 4.10 (103) (MC).

Most northerly records: W. INVERNESS-SHIRE [**97**] Sanna, Ardnamurchan, 6.6 (JBH, in Langmaid & Young, 2003). ORKNEY ISLANDS [**111**] 11.9 (Gauld, 2003).

Selected inland records: HERTFORDSHIRE [**20**] Bishops Stortford, 27.7 – 5.10 (10) (CWP); Garston, Watford, 11.8, 2.9 (CME); Hertford, 14.6 – 10.10 (8) (AW per CWP). BERKSHIRE [**22**] Fernham, 20.5 – 16.11 (168) (SN). W. SUFFOLK [**26**] Elveden, 13.8, 28.9 (HEB per AWP); Long Melford, 23.6, 2.8 (2) (DU per AWP). WORCESTERSHIRE [**37**] Bromsgrove, 22.5 (J. Rush). S.W. YORKSHIRE [**63**] Calderdale, 16.5 (2) (P. Talbot).

PIERIDAE

1545 ***Colias croceus*** **(Geoff.) Clouded Yellow [I][MC]**

Selected annual totals: W. CORNWALL [**1**] IOS: St Mary's – 28 (MAS). S. HAMPSHIRE [**11**] Gosport – 338 (D. Tinling). E. SUSSEX [**14**] Elms Farm, Icklesham – 130+ (Hunter, 2003). E. KENT [**15**] Dungeness - 51 (Clancy, 2003). S. ESSEX [**18**] Bradwell-on-Sea – 24. PEMBROKESHIRE [**45**] Skomer Island – 8 (Darke & Hayden, 2003). N. LINCOLNSHIRE [**54**] Gibraltar Point - 1 (Sykes, 2003). W. CORK [**H3**] Dursey Island - 8 (D&JS per IR)

Non-specific comments: W. CORNWALL [**1**] IOS: St Agnes, June (3), then a few through the year (Hicks, 2003); The Lizard, large numbers in late summer/early autumn (Tunmore, 2003). DORSET [**9**] Portland, 13.4 – 16.6 regular, including 1.6 (10). Early butterflies were thought to have bred/overwintered locally. 22.7 – 17.10 counts of 10-20 daily in August and September, single figure totals for September, October, and November (see also Large Counts) (MC). ISLE OF WIGHT [**10**] Afton Down, several during most visits: mid-August to early November (Knill-Jones, 2003). E. SUSSEX [**14**] Rye Harbour, 5.6, then regularly from 30.7 – 19.10 (Troake, 2003). E. SUFFOLK [**25**] Landguard Bird Observatory, a few throughout late summer/autumn (Odin, 2003); Minsmere, a few (Parfitt, 2003). S.E. YORKSHIRE [**61**] Spurn, 17.8 – 1.9 (1-4 daily) (Spence, 2003).

Earliest dates: W. CORNWALL [**1**] Newquay, 21.4 (D. Carp). S. DEVON [**3**] Berry Head, 12.4 (D. Lummis); Branscombe, 19.4 (R.M. Hill). DORSET [**9**] Bournemouth, from 15.4 (6) (MJS); Durlston, 16.4 (K. Wilkes); Lyme Regis, 27.3 (T. Page per NB); Portland, from 13.4 (MC). ISLE OF WIGHT [**10**] Brading Down, 17.4 (Knill-Jones, 2003). W. KENT [**16**] Rochester, 17.3 (S. Mold per NB).

Latest dates: W. CORNWALL [**1**] St Austell, 12.11 (R. Lane). S. DEVON [**3**] Harpford, 17.11 (2) (RFM). DORSET [**9**] Bournemouth, until 26.11 (MJS); Dorchester, 15.11 (MF); Durlston, 15.11 (anon.); Portland, until 17.11 (MC). ISLE OF WIGHT [**10**] Ventnor, 18.11 (Knill-Jones, 2003). E. SUSSEX [**14**] Cuckmere Haven, 9.11 (B. Cox); Beachy Head, 11.11 (per CRP); Icklesham, 18.11 (J. Willsher per CRP).

Large counts: S. DEVON [**3**] Slapton Sands, 14.8 (20+) (MC^2). DORSET [**9**] Portland, 15.8 (50+), 28.8 (20), 12.10 (20) (MC). W. SUSSEX [**13**] Thorney Island 18.8 (26) (BC per CRP). E. SUSSEX [**14**] Beachy Head, 17.8 (45+), 30.9 (54), 4.10 (85) (T. Wilson per RH); Cuckmere Valley, 24.9 (70) (D. Rushen per CRP). E. KENT [**15**] Dungeness, 13.8 (21) (Clancy, 2003).

Evidence of breeding: DORSET [**9**] Bournemouth, 15.4 (6 adults), 16.4 (4+ adults, including two newly emerged), 13.11 (5 adults, inc. pair *in cop.*), 24.11 (newly emerged male & vacated pupal case) (M.J. Skelton). S. HAMPSHIRE [**11**] near Winchester, 10.6, ovipositing female (per SN). DUBLIN [**H21**] Ringsend, 15-16.8, 10+ adults plus three ova on *Medicago sativa* and an ovum on *Lotus corniculatus* (B. Aldwell per IR).

Most northerly records: S.E. YORKSHIRE [**61**] Spurn, 17.8 – 1.9 (1-4 daily) (Spence, 2003). S.W. YORKSHIRE [**63**] near Halifax, 5.8 (S. Warren). ISLE OF MAN [**71**] Derbyhaven 30.5, 27.8; Dhoon Maughold, 23.8; Scarlett, 10.9 (per GDC). LONDONDERRY [**H40**] Lough Beg, 15.8 (M. Tickner per TB^4).

NYMPHALIDAE

1590 *Vanessa atalanta* (L.) **Red Admiral [R][I]**

Selected annual totals: W. CORNWALL [**1**] IOS: St Mary's, Longstone – 526 (MAS). E. SUSSEX [**14**] Peacehaven - 287 (CRP). S. ESSEX [**18**] Bradwell-on-Sea - 1073 (Dewick, 2003). BERKSHIRE [**22**] Fernham – 100+ (SN). BANFFSHIRE [**94**] Ordiquhill - 191 (R. Leverton).

Earliest dates (active): S. HAMPSHIRE [**11**] Gosport, 1.1 (P. Potter). W. SUSSEX [**13**] Chichester, 2.1 (C. Fry). E. SUSSEX [**14**] Rye, 2.1 (per NB). BUCKINGHAMSHIRE [**24**] High Wycombe, 4.1 (anon.).

Latest dates (active): DORSET [**9**] Charmouth, 28.12 (M. Hicks). S. HAMPSHIRE [**11**] Portsdown, 28.12 (G. Roberts per RH). W. SUSSEX [**13**] Petworth, 28.12 (A. Howard per RH).

Large counts: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 14.9 (100+, feeding on ivy), Higher Moors, 16.9 (150) (MAS). S.E. YORKSHIRE [**61**] Spurn, 3.9 (350), 10.9 (100), 12.9 (100) (Spence, 2003). BANFFSHIRE [**94**] Ordiquhill, 11.9 (77) (R. Leverton). W. CORK [**H3**] Cape Clear Bird Observatory, 1-2.6 (several hundred) (S. Wing).

Light-trap records: W. CORNWALL [**1**] IOS: St Agnes, a few at light, undated (Hicks, 2003); IOS: St Mary's, Longstone, 12.9, 10.10 (MAS); Porthgwarra, 30.10 (JHC). DORSET [**9**] Portland Bird Observatory, 3.10 (MC).

Immature stages: W. CORNWALL [**1**] Mousehole beach, 3.10, larva (SN). S. DEVON [**3**] East Prawle, 22.12, larva on nettle (MC^2); Exmouth, 14.4, ten larvae and three pupae on nettle (AJ). ISLE OF WIGHT [**10**] Bonchurch, 28.3, larva that pupated on 4.4 (JH^3). N. HAMPSHIRE [**12**] Harewood Forest, 16.6, larva (JHC). S. ESSEX [**18**] Bradwell-on-Sea, 21.3, 31.3, larvae (Dewick, 2003).

1591 *Vanessa cardui* (L.) **Painted Lady [I]**

Selected annual totals: W. CORNWALL [**1**] IOS: St Mary's, Longstone - 82 (MAS). E. SUSSEX [**14**] Peacehaven - 105 (CRP). E. KENT [**15**] Dungeness Bird Observatory – 348 (DW^2). S. ESSEX [**18**] Bradwell-on-Sea - 501 (Dewick, 2003). PEMBROKESHIRE [**45**] Skomer Island – 569 (Darke & Hayden, 2003). S.E. YORKSHIRE [**61**] Spurn – 522 (Spence, 2003).

Earliest dates (active): W. CORNWALL [**1**] Ashton, 5.3 (Insectline, 2003); IOS: St Agnes, 23.3 (Hicks, 2003); IOS: St Mary's, Hugh Town, 24.3 (MAS); IOS: St Mary's, Longstone, 24.3 (MAS); The Lizard, 24.3 (Tunmore, 2003). W. DONEGAL [**H35**] Letterkenny, 24.3 (per IR). W. CORK [**H3**] Dursey Island, 11.3 nectaring on dandelions (D&JS per IR).

Latest dates (active): W. CORNWALL [**1**] IOS: St Agnes, late November (Hicks, 2003). DORSET [**9**] Bournemouth, 17.11 (M. Gibbons per RH); Portland Bill, 16.11 (MC). S. HAMPSHIRE [**11**] Portchester, 11.11 (A. Brooks per RH). S. ESSEX [**18**] Bradwell-on-Sea, 11.11 (Dewick, 2003).

Large counts: W. CORNWALL [**1**] IOS: St Mary's, Giant's Castle, 6.9 (40) (MAS); Porthallow, The Lizard, 4.6 (50+) (JS). S. DEVON [**3**] Slapton Sands, 14.8 (c300) (MC^2). DORSET [**9**] Portland Bird Observatory, 26-31.8 (100's) (MC). W. SUSSEX [**13**] Thorney Island 19.8 (41) (BC). E. SUSSEX [**14**] Beachy Head, 17.8 (50) (T. Wilson per RH). E. KENT [**15**] Dungeness, 14.8 (c130) (WT). S.E. YORKSHIRE [**61**] Spurn, 3.8 (50) (Spence, 2003). W. CORK [**H3**] Cape Clear Bird Observatory, 1-2.6 (several hundred) (S. Wing); Dursey Island, 1.6 (50+), 2.6 (137) (D&JS per IR).

Light-trap records: W. CORNWALL [**1**] The Lizard, May (1), 29.10 (2) (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory, 18.8 (MC). BERKSHIRE [**22**] Fernham, 30.8 (SN).

Immature stages: S. DEVON [**3**] Branscombe Mouth, 14.9, four larvae on *Cirsium vulgare* (BPH). N. LINCOLNSHIRE [**54**] Gibraltar Point, one larva producing an adult on 2.8 (Sykes, 2003). WEXFORD [**H12**] Killoughrim Wood, 19.9 (50 larvae) (B. Aldwell per IR). DUBLIN [**H21**] Ringsend, 20.9 (2 larvae) (B. Aldwell per IR).

SPHINGIDAE

1984 ***Macroglossum stellatarum*** **(L.) Humming-bird Hawk-moth [I]**

Selected annual totals: W. CORNWALL [**1**] IOS: St Mary's, Longstone - 19 (MAS). S. DEVON [**3**] near Yelverton – 7 (in July) (T. Sleep per RFM). E. SUSSEX [**14**] Peacehaven - 13 (CRP). E. KENT [**15**] Dungeness area – 16 (Clancy, 2003); Isle of Thanet – 9 (Solly, 2003). S. ESSEX [**18**] Bradwell-on-Sea - 52 (Dewick, 2003). HERTFORDSHIRE [**20**] Hemel Hempstead – 7 (MN per CWP).

Earliest dates (active): W. CORNWALL [**1**] Penzance, 25.2 (per S. Turk). S. DEVON [**3**] Kingsbridge, 15.1 (MC^2). ISLE OF WIGHT [**10**] Niton, 11.2 (Knill-Jones, 2003); Shanklin, 27.2 (SAK-J). E. KENT [**15**] Broadstairs, 20.1 (R. Hope per IDF). CAMBRIDGESHIRE [**29**] St Ives, 19.1 (M. Telfer per NG-D).

Latest dates (active): E. KENT [**15**] Dungeness, 8.12 (D. Sage); Sandwich, 28.10 (DW). E. NORFOLK [**27**] Bodham, 28.10 (anon.).

Large counts: W. CORNWALL [**1**] IOS: Tresco, Abbey Gardens, 17.9 (5) (JHC, RRC). S. ESSEX [**18**] Bradwell-on-Sea, 26.6 (4) (Dewick, 2003). W. CORK [**H3**] Clonakilty, 2.6 (4) (K. Cronin per IR); Dursey Island, 2.6 (5) (D&JS per IR).

Most northerly records: CAITHNESS [**109**] Noss Head, near Wick, 29.9 (N. Darroch). ORKNEY ISLANDS [**111**] 12.6, 12.8 (Gauld, 2003). SHETLAND ISLANDS [**112**] Foula, 14.6, 12.7 (Pennington, 2003).

Light-trap records: W. CORNWALL [**1**] The Lizard, 26.10 (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory, 19.9 (MC). E. KENT [**15**] Dungeness, 17.8 (DW^2); Greatstone, 8.7 (BB). E. NORFOLK [**27**] Eccles-on-Sea, 21.9 (Bowman, 2003). DURHAM [**66**] Skelton, 11.9 (TB).

Evidence of hibernation: S. DEVON [**3**] Plymouth railway station, 7.2, first noted in the same spot on 9 November 2001 (MRH). DORSET [**9**] Dorset County Hospital, Dorchester, 5.4, found dead on main stairwell (PH). CAMBRIDGESHIRE [**29**] St Ives, 19.1 , after period of activity, settled under the eaves of a house (M. Telfer per NG-D).

Immature stages: S. ESSEX [**18**] Bradwell-on-Sea, 22.7, 1.8 (3 larvae in total) (Dewick, 2003). S. LANCASHIRE [**59**] Liverpool, late August, five larvae on *Galium verum* at the National Wildflower Centre, three having produced adults by the end of September (D. Young).

NOCTUIDAE

2091 ***Agrotis ipsilon*** **(Hufn.) Dark Sword-grass [I]**

Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes - 156 (Hicks, 2003); IOS: St Mary's, Longstone – 270 (MAS). DORSET [**9**] Portland Bird Observatory - 522 (MC). E. SUSSEX [**14**] Elms Farm, Icklesham – 103 (Hunter, 2003). E. KENT [**15**] Dungeness area – 142 at ten sites (Clancy, 2003); Isle of Thanet – 111 at four sites (Solly, 2003). ISLE OF MAN [**71**] 52 at five sites, including 12 at Dhoon Maughold on 28.8 (per GDC).

Ealiest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 3.3 (MAS). DORSET [**9**] Portland Bird Observatory, 3.3 (MC). ISLE OF WIGHT [**10**] Freshwater, 17.2 (SAK-J). E. KENT [**15**] Dungeness, 12.2 (CR); Isle of Thanet, 12.2 (Solly, 2003).
Latest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 25.12 (2), 29.12 (MAS).
Large single night counts: DORSET [**9**] Portland Bird Observatory, 19.8 (39) (MC). W. SUSSEX [**13**] Pagham Harbour 17.8 (32) (SN).

2119 ***Peridroma saucia*** **(Hb.) Pearly Underwing [I]**
Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes - 66 (Hicks, 2003); IOS: St Mary's, Longstone – 156 (MAS); Pednavounder, The Lizard, 29.9 - 12.10 (64) (SN); The Lizard – 54 at three sites (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory - 285 (MC). E. KENT [**15**] Dungeness area – 52 at ten sites (Clancy, 2003); Isle of Thanet – 52 at four sites (Solly, 2003).
Ealiest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 17.2 (MAS). DORSET [**9**] Portland Bird Observatory, 12.2 (MC).
Latest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 14.12 (MAS). DORSET [**9**] Portland Bird Observatory, 22.12, 24.12 (MC).
Large single night counts: DORSET [**9**] Portland Bird Observatory, 4.10 (33), 5.10 (30) (MC).
Most northerly records: W. LANCASHIRE [**60**] St Anne's, 4.10 (J. Steeden per SMP). S.E. YORKSHIRE [**61**] Spurn, 14.9, 29.9, 2.10 (2) (Spence, 2003). ISLE OF MAN [**71**] Dhoon Maughold, 29.9 – 14.10 (28); South Barrule, 31.10; Minorca Laxey, undated (3) (per GDC).
Selected inland records: N. HAMPSHIRE [**12**] Selborne, 15.9, 19.9, 2.10, 4.10, 8.10 (AA per IRT). SURREY [**17**] Nr. Woking, 6.9 (MW). HERTFORDSHIRE [**20**] Bishops Stortford, 4.9 (JF^2 per CWP); Long Marston, 25.9 (PB^2 per CWP). BERKSHIRE [**22**] Dry Sandford, 2.10 (AK); Fernham, until 24.11 (6) (SN). BUCKINGHAMSHIRE [**24**] Milton Keynes, 23.5, 3.6 (LH). W. SUFFOLK [**26**] Sicklesmere 7.6 – 14.6 (4) (S. Dumican per AWP). LEICESTERSHIRE [**55**] Markfield, 23.5 (AM).
Immature stages: WICKLOW [**H20**] Ashford, 3.8, larva found in a polytunnel, the adult bred on 28.8 (AT).

2195 ***Mythimna vitellina*** **(Hb.) Delicate [I][MC?]**
Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes – 63 (Hicks, 2003); IOS: St Mary's, Longstone – 257 (MAS); Pednavounder, The Lizard, 29.9 - 12.10 (53) (SN); The Lizard – 36 at three sites (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory - 68 (MC); West Bexington – 37 (RE). ISLE OF WIGHT [**10**] Freshwater – 13 (SAK-J); approximate Island total – 20 (Knill-Jones, 2003). W. SUSSEX [**13**] Ferring-by-Sea – 6 (THF). E. KENT [**15**] Dungeness area – 16 at ten sites (Clancy, 2003). PEMBROKESHIRE [**45**] Skomer Island – 3 (Darke & Hayden, 2003).
Ealiest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 16.5, 17.5 (MAS); The Lizard, 18.5 (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory, 15.5, 16.5 (MC); Puddletown, 18.5 (HWH).
Latest dates: W. SUSSEX [**13**] Ferring-by-Sea, 15.11, 16.11 (THF). E. KENT [**15**] Lydd-on-sea, 9.11 (RC per SPC).
Large single night counts: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 2.10 (27), 3.10 (34), 4.10 (37) (MAS); Pednavounder, The Lizard, 10.10 (14) (SN). DORSET [**9**] Portland Bird Observatory, 5.10 (12) (MC).
Most northerly records: E. NORFOLK [**27**] Eccles-on-Sea, 3.10 (2) (Bowman, 2003).

WICKLOW [**H20**] Ashford, 16.9, 18.9 (AT).
Inland records: BERKSHIRE [**22**] Nr. Faringdon, 7.10 (MFVC). W. SUFFOLK [**26**] Nowton, undated (R.F. Eley per AWP).

2203 ***Mythimna unipuncta*** **(Haw.) White-speck [I][MC?]**
Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes – 204 (Hicks, 2003); IOS: St Mary's, Longstone – 413 (MAS); Lamorna Cove – 106 (29.10-1.11) (JHC); Pednavounder, The Lizard – 78 (29.9-12.10) (SN); The Lizard – 77 at three sites (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory - 126 (MC). ISLE OF WIGHT [**10**] 70+ at three sites (JH[3], SAK-J). W. SUSSEX [**13**] Ferring-by-Sea - 13 (THF); Selsey – 8 (Patton, 2003); Walberton – 16 (JTR per CRP). E. SUSSEX [**14**] Peacehaven - 12 (CRP). E. KENT [**15**] Dungeness area – 28 at ten sites (per SPC); Isle of Thanet – 10 at four sites (Solly, 2003). E. SUFFOLK [**25**] Landguard Bird Observatory - 6 (Odin, 2003). ISLE OF MAN [**71**] Dhoon Maughold - 9 (Craine, 2003).
Ealiest dates: W. CORNWALL [**1**] IOS: St Agnes, January (undated) (Hicks, 2003); IOS: St Mary's, Longstone, 21.2 (MAS). DORSET [**9**] Portland Bird Observatory, 4.1, 3.3 (MC). ISLE OF WIGHT [**10**] Bonchurch, 29.3 (JH[3]). W. SUSSEX [**13**] Ferring-by-Sea, 11.3, 2.4 (THF).
Latest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, nightly until 31.12 (MAS); The Lizard, 20.12 (Tunmore, 2003). DORSET [**9**] Bridport, 14.12 (MSP); Portland Bird Observatory, 3.12 (3) (MC); East Lulworth, 12.12 (MSP); West Bexington, 4.12 (RE). ISLE OF WIGHT [**10**] Totland, 13.12 (Knill-Jones, 2003). W. SUSSEX [**13**] Walberton, 2.12 (JTR per CRP). E. SUSSEX [**14**] Brighton, 2.12 (J. Paul). E. KENT [**15**] Isle of Thanet, 1.12 (Solly, 2003).
Large single night counts: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 29.10 (96), 30.10 (35) (MAS); Lamorna Cove, 29.10 (45), 30.10 (40) (JHC); Kynance Cove, 30.10 (44) (MT).
Most northerly records: SHETLAND ISLANDS [**112**] Foula, 4.10 (Pennington, 2003).
Selected inland records: E. SUSSEX [**14**] Crawley Down, 4.10 (JHC). BERKSHIRE [**22**] Dry Sandford, 15.10 (AK).

2441 ***Autographa gamma*** **(L.) Silver Y [I]**
Selected annual totals from fixed traps: W. CORNWALL [**1**] IOS: St Agnes – 122 (Hicks, 2003); IOS: St Mary's, Longstone – 221 (MAS); The Lizard – 227 at three sites (Tunmore, 2003). DORSET [**9**] Portland Bird Observatory - 904 (MC). ISLE OF WIGHT [**10**] Approximate Island total – 300 (Knill-Jones, 2003). S. HAMPSHIRE [**11**] Southsea – 203 (IRT). W. SUSSEX [**13**] Selsey – 310 (Patton, 2003). E. SUSSEX [**14**] Peacehaven - 481 (CRP). E. KENT [**15**] Isle of Thanet – 1211 at four sites (Solly, 2003). HERTFORDSHIRE [**20**] Hertford - 111 (AW per CWP); Bishops Stortford - 117 (JF[2] per CWP). BERKSHIRE [**22**] Fernham - 156 (SN). E. NORFOLK [**27**] Eccles-on-Sea - 230 (Bowman, 2003). PEMBROKESHIRE [**45**] Skomer Island – 101 (Darke & Hayden, 2003).
Ealiest dates: W. CORNWALL [**1**] The Lizard, 29.1 (Tunmore, 2003). DORSET [**9**] Upwey, 4.1 (PH). E. KENT [**15**] Kingsgate, 30.1 (FS per IDF). N. ESSEX [**19**] Tolleshunt D'Arcy, 13.1 (AC).
Latest dates: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 19.12, 21.12 (MAS). DORSET [**9**] Durlston, 22.12 (2) (SN). ISLE OF WIGHT [**10**] Totland, 29.12 (SAK-J per IRT). S. HAMPSHIRE [**11**] Portchester, 22.12 (JS).

Large single night counts: DORSET [**9**] Portland Bird Observatory, 5.8 (81), 18.8 (111) (MC). SHETLAND ISLANDS [**112**] Eswick, 24.8 (80) (TR).
Large diurnal/dusk counts: W. CORNWALL [**1**] IOS: St Mary's, Longstone, 1.6 (200+), 2.6 (130), 1.10 (150) (MAS). E. SUSSEX [**14**] Beachy Head, 17.8 (c100) (anon.). S.E. YORKSHIRE [**61**] Spurn, 6.6 (86) (BRS).
Immature stages: S. WILTSHIRE [**6**] Chittern to Tilshead road, 25.6 several larvae (JHC). E. KENT [**15**] Brookland, late August, larvae plentiful in french bean fields (SPC). HERTFORDSHIRE [**20**] Garston, Watford, 19.9, larva (CME). W. SUFFOLK [**26**] Elveden, 6-13.9, larvae (B. Statham per AWP).

ANNEX 3: SELECTED CHANNEL ISLANDS [VC 113] RECORDS

1262 *Cydia amplana* **(Hb.)**
Guernsey: Trinity Cottages, 17.8 (JH^2).

1403 *Diasemiopsis ramburialis* **(Dup.)**
Guernsey: Forest, 19.8 (TNDP), 30.10 (TNDP per PC); Guernsey: L'Ancresse, 11.9 (RA); Guernsey: St. Peters, 30.10 (PC).

1465 *Nephopterix angustella* **(Hb.)**
Guernsey: Forest, 12.9, first VC record (TNDP).

1603 *Issoria lathonia* **(L.) Queen of Spain Fritillary**
Guernsey: St Saviour's, 27.3 (B. Kendall per RA).

1678a *Cyclophora ruficiliaria* **(H.-S.) Jersey Mocha**
Jersey: Creux Baillot, 15.8 (RL^2 per DJW). Subsequently found to be locally widespread on the island, with old specimens found dating back to 1917.

1741 *Costaconvexa polygrammata* **(Borkh.) Many-lined**
Guernsey: Forest, 14.9 (TNDP).

1921a *Crocallis dardoinaria* **(Donzel) Dusky Scalloped Oak**
Guernsey: Icart, 15.8 – 20.9 (4) (TNDP). These records are associated with a breeding population in VC **113.**

2092a *Agrotis syricola* **(Corti & Draudt) Grouville Dart**
Jersey: Grouville, 10.9 (DJW).

2436 *Macdunnoughia confusa* **(Steph.) Dewick's Plusia**
Guernsey: Trinity Cottages, 30.9 (JH^2 per RA); St. Peters, 1.10, 2.10 (PC per RA).

2453 *Catocala electa* **(View.) Rosy Underwing**
Guernsey: Quanteraine Valley, 21.8 (Austin, 2003); Guernsey: St. Peters, 29.8 (PC). Jersey: Grouville, 25.8, 7.9 (3), 8.9, 10.9 (Wedd, 2003). These records are probably associated with a breeding population in VC **113.**

APPENDIX 1

Corrections/Additions to 2001 report

1545 ***Colias croceus*** **(Geoff.) Clouded Yellow [I][MC]**
[W. CORK [**H3**] Old Head of Kinsale, 3.10 (6) (H. Hussey per IR). DOWN [**H38**] St John's Point, 21.9 (D. Hatrick per IR)]. Records refer to 2002 not 2001.

1567a ***Cacyreus marshalli*** **(Butler) Geranium Bronze [In]**
HUNTS [**31**] Little Paxton, larva reported on 22.12 produced an adult indoors on 24.2.02 (ID). It should be noted that this record was associated with British-propagated *Pelargonium* plants, and was therefore the first British record of this species not attributable to direct importation.

1591 ***Vanessa cardui*** **(L.) Painted Lady [I]**
[WEXFORD [**H12**] Killoughrim Wood, 19.9 (50 larvae) (B. Aldwell per IR)]. Record refers to 2002 not 2001.

2045 ***Eilema caniola*** **(Hb.) Hoary Footman [R][I]**
W. SUSSEX [**13**] Ferring-by-Sea, 22.8 (THF).

2195 ***Mythimna vitellina*** **(Hb.) Delicate [I][MC?]**
W. SUSSEX [**13**] Ferring-by-Sea, 28.9 (4), 5.10, 9.10, 12.10, 13.10 (5), 16.10, 19.10 (2), 26.10, 27.10 (2) (THF).

2385 ***Spodoptera exigua*** **(Hb.) Small Mottled Willow [I]**
BEDFORDSHIRE [**30**] Cockayne Hatley, 12.8 (I.P. Woiwood per LH).

2407 ***Eublemma ostrina*** **(Hb.) Purple Marbled [I]**
[DORSET [**9**] Portland Bird Observatory, 21.8 (G. Senior per MC) - erroneous] Specimen has now been re-identified as the following species, with the correct date and locality given below.

2407a ***Eublemma purpurina*** **(D. & S.) Beautiful Marbled [I]**
DORSET [**9**] Southwell, Portland, 20.8, the first British record (GBS).

2451 ***Catocala fraxini*** **(L.) Clifden Nonpareil [I]**
S.E. YORKSHIRE [**9**] Muston, 19.9 (Collins, 2003).

Additions to the 1999 report

0857 ***Anarsia lineatella*** **(Zell.) [In][I]**
E. KENT [**15**] New Romney, 6.7, the first county record (SPC, det. DJLA).

2423 ***Nycteola asiatica*** **(Krul.) Eastern Nycteoline [I]**
E. KENT [**15**] Greatstone, 22.9 (BB, SPC, det. MRH).

Addition to the 1998 report

1492 ***Oxyptilus laetus*** **(Zell.) [I]**
KIRKCUDBRIGHTSHIRE [**73**] Abbey Burn Foot, 20.6, new to Scotland (Plant, 2005).

Addition to the 1993 report

2423 ***Nycteola asiatica*** **(Krul.) Eastern Nycteoline [I]**
E. KENT [**15**] Lydd, 20.9 (KR, SPC, det. MRH). This now becomes the first British record.

Initials of recorders

AA	Aston, A.	HEB	Beaumont, H.E.	NA	Adams, N.
AB	Beck, A.	HG	Gardner, H.	NB	Bowles, N.
AB^2	Bull, A.	HM	Hull, M.	NB^2	Butt, N.
AC	Cook, A.	HP	Parkin, H.	NF	Fletcher, N.
AC^2	Collins, A.	HWH	Wood Homer, H.	NF^2	Flisher, N.
AD	Dawson, A.	ID	Dawson, I.	NG-D	Greatorex-Davies, N.
AFG	Gardner, A.F.	IDF	Ferguson, I.D.	NH	Hall, N.
AGJB	Butcher, A.G.J.	IH	Hunter, I.	NJ	Jarman, N.
AH	Hardacre, A.	IK	Kimber, I.	NL	Littlewood, N.
AHD	Dobson, A.H.	IR	Rippey, I.	NM	Muddeman, N.
AJ	Johnson, A.	IRT	Thirlwell, I.R.	NMH	Hall, N.M.
AJP	Pickles, A.J.	JB	Burge, J.	NO	Odin, N.
AK	Kennard, A.	JB^2	Beswetherick, J.	NS	Sherman, N.
AM	Mackay, A.	JBH	Higgott, J.B.	NW	Whinney, N.
AM^2	Middleton, A.	JC	Clifton, J.	PAC	Crowther, P.A.
AMD	Davis, A.M.	JC^2	Cadbury, J.	PAD	Davey, P.
ANG	Graham, A.N. & J.E.	JC^3	Cooper, J.	PB	Bergdahl, P.
AP	Palmer, A.	JD	Down, J.	PB^2	Bygate, P.
AT	Tyner, A.	JF	Fradgley, J.	PB^3	Bryant, P.
AW	Wood, A.	JF^2	Fish, J.	PC	Costen, P.
AWP	Pritchard, A.	JH	Herbert, J.	PC^2	Clark, P.
BB	Banson, B.	JH^2	Hooper, J.	PG	Gould, P.
BC	Collins, B.	JH^3	Halsey, J.	PH	Harris, P.
BD	Dawson, B.	JHC	Clarke, J.H.	PH^2	Hampson, P.
BFS	Skinner, B.F.	JJ	Janes, J.	PHS	Stirling, P.H.
BG	Goodey, B.	JK	Kernohan, J.	PJ	Jones, P.
BJ	Jackson, B.	JM	Martin, J.	PJB	Baker, P.J.
BKW	West, B.K.	JM^2	Murray, J.	PK	Kitchener, P.
BP	Price, B.	JMc	McGill, J.	PL	Laurie, P.
BP^2	Palmer, B.	JMM	McMillan, J.	PM	Milton, P.
BPH	Henwood, B.P.	JO	Owen, J.	PNB	Butter, P.N.
BRS	Spence, B.R.	JRL	Langmaid, J.R.	PT	Tennant, P.
BS	Stewart, B.	JS	Stokes, J.	PT^2	Tilley, P.
CD	Davies, C.	JTR	Radford, J.T.	PT^3	Troake, P.
CF	Fletcher, C.	KET	Tuck, K.E.	PW	Waring, P.
CH	Hart, C.	KR	Redshaw, K.	RA	Austin, R.
CG	Gibson, C.	LB-L	Broom-Lynne, L.	RA^2	Arthur, R.
CM	Manley, C.	LG	Gregory, L.	RAB	Bell, R.A.
CME	Everett, C.M.	LH	Hill, L.	RC	Clamp, R.
CR	Roots, C.	LJT	Townsend, L.J.	RC^2	Cox, R.
CR^2	Rothwell, C.	LK	Kneale, L.	RE	Eden, R.

CRP	Pratt, C.R.
CSB	Balchin, C.S.
CWP	Plant, C.W.
DB	Burrows, D.
DBT	Throup, D.B.
DBW	Wooldridge, D.
DC	Cooper, D.
DC^2	Crawford, D.
DCGB	Brown, D.C.G.
DF	Foot, D.
DG	Gibbs, D.
DGG	Green, D.G.
DH	Hipperson, D.
DH^2	Heath, D.
D&JS	Scott, D. & J.
DJLA	Agassiz, D.J.L.
DJW	Wedd, D.J.
DMG	Dorset Moth Group
DO'K	O'Keeffe, D.
DRML	Long, D.R.M.
DS	Sawyer, D.
DU	Underwood, D.
DW	Wrathall, D.
DW^2	Walker, D.
DW^3	Webb, D.
EG	Goodyear, E.
EP	Ponting, E.
EP^2	Pratt, E.
EU	Urbanski, E.
FS	Solly, F.
GBS	Senior, G.B.
GD	Dennis, G.
GDC	Craine, G.D.
GF	Follows, G.
GRH	Hopkins, G.R.
LO	Oakes, L.
MAS	Scott, M.A. & W.J.
MB	Bailey, M.
MC	Cade, M.
MC^2	Catt, M.
MC^3	Cornish, M.
MCM	Marsh, M.C.
MCP	Perry, M.C.
MD	Deans, M
MF	Forster, M.
MFVC	Corley, M.F.V.
MG	Gurney, M.
MG^2	Godfrey, M.
MEH	Hicks, M.E.
MJ	Jeffes, M.
MJS	Skelton, M.J.
MJW	White, M.J.
MLO	Opie, M.L.
MN	Newland, M.
MO'D	O'Donnell, M.
MP	Pennington, M.
MP^2	Preston, M.
MPL	Lawlor, M.P.
MRH	Honey, M.R.
MS	Skevington, M.
MS^2	Sutton, M.
MSP	Parsons, M.S.
MT	Tunmore, M.
MW	Waller, M.
MW^2	Wall, M.
RF	Fox, R.
RF^2	Follows, R.
RFM	McCormick, R.F.
RG	Gaunt, R.
RH	Hollins, R.
RL	Lambert, R.
RL^2	Long, R.
RRC	Cook, R.R.
RT	Terry, R.
S&SW	Walmsley, S. & S.
SAK-J	Knill-Jones, S.A.
SB	Bosanquet, S.
SG	Goddard, S.
SJB	Barron, S.J.
SMP	Palmer, S.M.
SN	Nash, S.
SP	Patton, S.
SPC	Clancy, S.P.
SR	Read, S.
SW	Wood, S.
TB	Barker, T.
TB^2	Button, T.
TB^3	Brereton, T.
TB^4	Boyd, T.
TDC	Chapman, T.D.
TE	Ezard, T.
TG	Green, T.
THF	Freed, T.H.
TM	Miller, T.
TNDP	Peet, T.N.D.
TR	Rogers, T.
TS	Steele, T.
VS	Shenston, V.
WT	Truckle, W.

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Recording arrangements in north-west Wales

Anglesey moth records

Having taken over this year as County Moth Recorder for VC 52 Anglesey, I am engaged in a review of the currently available records. I would be particularly pleased to receive any old Anglesey records which have been lying neglected in field notebooks, or which derive from specimens in collections. Anyone contributing such records or with information which leads me to useful historic material, will be welcome to receive a free copy of the *North West Wales Lepidoptera Report*. Volumes so far produced are 2001, 2002, and 2003, with 2004 in preparation (early 2006).

North West Wales Lepidoptera Database

In tandem with the Lepidoptera Report, Andrew Graham has constructed an impressive database program for the area covered by VCs 48, 49 and 52. The database draws on the currently available records (comprehensive for VC 48 - partial for VCs 49 and 52) and gives flight histograms, dot distribution maps, and much other useful information for over 1300 taxa. Copies of the database CD are available from Andrew Graham (address below); SAE appreciated.

Vice County Recorders in north-west Wales

There have been some recent changes in the VC recorders in this area. If you have any appropriate records, please forward them to the following people:

VC48 Merioneth

Moths and butterflies: Andrew Graham, Trawscoed, Llanuwchllyn, Bala, Gwynedd LL23 7TD (E-mail: angrhm@globalnet.co.uk);

VC49 Caernarfon

Moths: Julian Thompson, Pensychnant, Sychnant Pass, Conwy, Gwynedd LL32 8BJ (E-mail: julian@pensychnant.fsnet.co.uk);

Butterflies: David Thorpe, 3 Brynteg, Clwt y Bont, Gwynedd LL55 3DT (E-mail: david.thorpe@environment-agency.wales.gov.uk);

VC52 Anglesey

Moths: John Harold, Hen Ardd, Carreg y Gath, Rhiwlas, Bangor, Gwynedd LL57 4HD (E-mail: jhmoths@yahoo.co.uk);

Butterflies: David Thorpe, 3 Brynteg, Clwt y Bont, Gwynedd LL55 3DT (E-mail: david.thorpe@environment-agency.wales.gov.uk).

SCARLET MALACHITE BEETLE *MALACHIUS AENEUS* (L.) (COL.: MELYRIDAE): STATUS AND DISTRIBUTION IN THE UK

ROB COLEMAN

University of East Anglia, School of Continuing Education, Norwich, NR4 7TJ.
(E-mail: robert.coleman@uea.ac.uk)

Abstract

Malachius aeneus (Linn.) is a beetle listed on the UK Biodiversity Action Plan. Recent survey work accompanied by a popular media appeal has highlighted the current status of this species in the UK. These new data are presented with a review of existing historical records. The validity of reports garnered by the appeal is discussed.

Introduction

The scarlet malachite beetle is an attractive insect, 7 – 9 mm in length, in a group colloquially known as the soft-winged flower beetles. Its striking livery, with the elytra suffused with bright red and metallic green, gives the beetle its colloquial name. Formerly regarded as common (Cox, 1874), *M. aeneus* has been recorded from 37 Watsonian vice-counties across the UK. In recent years the species has been in decline and was added to the UK Biodiversity Action Plan (UKBAP) in 1999 (HMSO, 1999) and is listed in Red Data Book category 2 (Vulnerable) in Shirt (1987).

Surveys contracted by English Nature between 1999 and 2001 found the beetle in just 3 10-kilometre O.S grid squares in England, at sites in North Essex, Hertfordshire and the New Forest (Hodge, 2001, Plant, 2002).

Historic Distribution

Malachius aeneus was regarded as a common species by Victorian coleopterists, widely distributed across southern Britain (Stephens, 1839; Cox, 1874). However, approaching turn of the century, there is some evidence that a range contraction had been noted, and from 1890 onwards the beetle is described by most authors as local (e.g., Fowler, 1890; Joy, 1932).

Due to its distinctive appearance, historic records of the scarlet malachite beetle have been accepted without question. During 2005, data were gathered from major UK Coleoptera collections adding to existing records extracted by Hodge (2000). The total of 230 records are presented in Figure 1.

In Britain, *Malachius aeneus* has been recorded outside England on three occasions, with two early records from South Glamorgan and a single Scottish specimen from the Isle of Arran. In England most records are from southern counties although there are a smattering of northern records from Yorkshire, County Durham, Cheshire and Lancashire. In the south, records from East Anglia, Oxfordshire and apparent former strongholds in Berkshire peter out by the end of the 1950s. In the last 30 years, finds in Kent (which has provided specimens from a number of sites since 1900), Surrey and Somerset represent the only locations away from current known sites. Records from all vice-counties are summarised in Table 1.

Figure 2. Recent distribution of *Malachius aeneus* in the UK. Black squares represent sites found in 2000 that continued to harbour the beetle in 2005. White squares represent new records from the 2005 survey (for reasons of clarity 10km squares are not to scale).

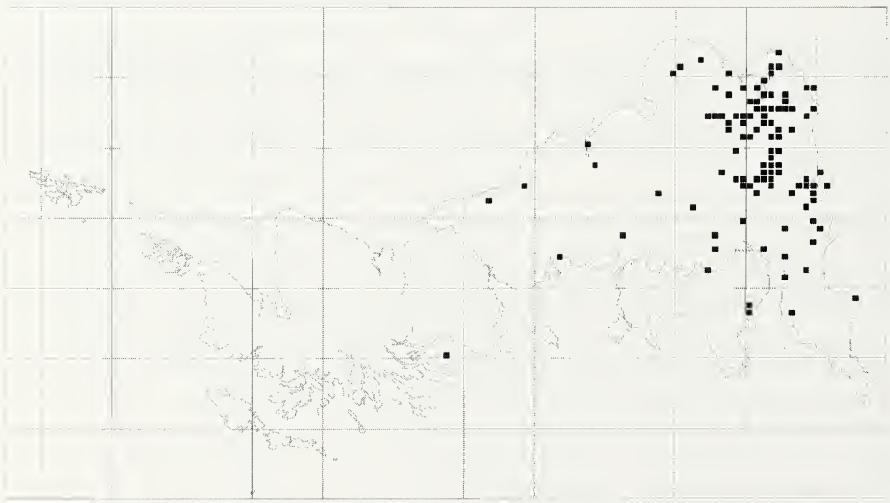

Figure 1. Historic distribution of *Malachius aeneus* in the UK. Black squares represent records from 10km squares.

New finds in 2005

Repeated survey effort in 2005 confirmed the beetles' continued presence at the sites recorded by the English Nature survey and added records from three new 10 km squares (Figure 2).

A project investigating the scarlet malachite beetles' autecology centred on populations in Essex (Coleman, 2005) was accompanied by a media appeal orchestrated by the invertebrate conservation charity Buglife. A press release and survey leaflet generated a ripple of attention including features on local television and radio. In addition, an education project in Primary schools stimulated local interest. As a result, Buglife fielded over 100 enquiries regarding the scarlet malachite beetle from the general public. Whilst many of the reported sightings centred upon cases of mistaken identity (generally confusion with the equally scarlet Lily Beetle *Lilioceris lilii,* Chrysomelidae) a number of reports warranted further investigation.

Of these, three sites resulted in uncorroborated records and a fourth a likely new breeding area (two specimens, male and female, were discovered here). The provenance of these new records are described in Table 2.

Assessing the validity of uncorroborated reports

In any attempt to involve the general public in survey work the validity of the records produced should be the subject of scrutiny. Indeed, 'citizen science' has received widespread criticism concerning the reliability of data collected by non-specialists. This project produced three new sites that, whilst uncorroborated, can be treated with a high degree of confidence. For each new record the site was visited and the person reporting the sighting was interviewed.

At sites where records are accepted but specimens were not located the following three justifications are applicable: (1) Visits made to authenticate the records were made on days which were likely to prove unproductive for field work (in heavy rain when beetles could seldom be found by sweep-netting). This was necessitated by the priority given to the ecological study. but obviously reduced the likelihood of finding specimens on a brief visit. (2) All sites contained areas of suitable habitat with primary food-plants. (3) On each occasion the person reporting the sighting had had a close encounter with the insect and had held it in their hand for a period of time (one was picked from a picnic rug, one was rescued from a water-butt and a third had become entangled in hair). Each reporter was presented with a live specimen for verification – a technique that appeared to be very successful (accepted recorders quickly and unequivocally identified *Malachius aeneus* – a number of others were unable to do so and these reports were rejected on grounds of insufficient evidence).

Conservation implications and future action

Despite receiving a high degree of media interest, the comparatively small number of new records of *Malachius aeneus* serves to confirm its rarity in the UK and underline its *Red Data Book* status. However, optimism for the future of this

Vice County (Number)	Years with records	Year of last record
Clyde Islands (100)	1	1892
Durham (66)	1	before 1900
North-west Yorkshire (65)	1	before 1900
South-west Yorkshire (63)	1	1983
South-east Yorkshire (61)	1	1940
South Lancashire (59)	1	1891
Cheshire (58)	1	before 1900
Derbyshire (57)	1	before 1900
Glamorganshire (41)	2	before 1900
Warwickshire (38)	3	before 1900
Herefordshire (36)	3	1950
East Gloucestershire (33)	1	1944
Bedfordshire (30)	1	2005
Cambridgeshire (29)	4	1960
East Norfolk (27)	2	1893
West Suffolk (26)	1	1908
East Suffolk (25)	4	1950
Buckinghamshire (24)	1	1869
Oxfordshire (23)	5	1949
Berkshire (22)	17	1953
Middlesex (21)	3	1893
Hertfordshire (20)	11	2005
North Essex (19)	12	2005
South Essex (18)	7	2005
Surrey (17)	10	1996
West Kent (16)	17	2000
East Kent (15)	5	1984
East Sussex (14)	5	1907
West Sussex (13)	1	before 1900
North Hampshire (12)	5	1945
South Hampshire (11)	32	2005
Isle of Wight (10)	1	1913
Dorset (9)	4	1995
North Somerset (6)	5	1987
South Somerset (5)	1	1949
North Devon (4)	1	before 1900
South Devon (3)	1	1962

Table 1. Records of the scarlet malachite beetle (*Malachius aeneus)* in the UK by Watsonian Vice-County. *(Data source: NBN, museum records, private collections).*

distinctive insect can be taken from its apparent fidelity and persistence at known sites which have now had their conservation importance highlighted. Monitoring at these locations is due to continue in 2006 along with further investigation based upon the new findings. Buglife intend to renew their interest in this species with further appeals: reports of the scarlet malachite beetle should be referred to scarlet.malachite@buglife.co.uk.

Site	O.S. Grid Ref	Source	Notes
Great Billington, Bedfordshire	SP 9422	TV appeal	Potential new county record
Rickling Green, North Essex	TL 5130	Leaflet	Individuals sighted on more than one occasion
Howlett End, North Essex	TL 5735	TV appeal	Two specimens present
Waltons Park, North Essex	TL 5943	Education Project	Identified in the field from publicity postcard

Table 2. New sites reported by members of the public as a result of the media appeal in 2005.

Acknowledgements

This work was undertaken as part on an M.Sc. in Applied Ecology and Conservation at the University of East Anglia. I am grateful to Peter Hodge for extracting data from the Natural History Museum, London and various private collections. Thanks also to staff and curators at other centres for contributing records or allowing me to view their collections. Jamie Roberts at Buglife co-ordinated the successful public appeal. This project received financial support from English Nature as part of the Species Recovery programme. I am also grateful to the two anonymous referees who commented on the original draft of this paper.

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Effect of survey start time on counts of the Glow-worm *Lampyris noctiluca* (Col.: Lampyridae)

Transect counts of adult female Glow-worms *Lampyris noctiluca* (Coleoptera: Lampyridae) have been undertaken as part of the Essex Glow-worm Survey which started in 2001 with the aim of determining whether the county population is declining (Gardiner, T., Pye, M. & Field, R., 2002. Glow-worms *Lampyris noctiluca* L. (Coleoptera: Lampyridae) in Essex: results of the 2001 Essex Glow-worm Survey. *Essex Naturalist* **19**: 151-159). The survey required each transect to be at least 100 metres in length and to be walked once in each of three two-week periods: 9 – 22 July, 23 July – 5 August, and 6 – 19 August in all years of the survey. Any glowing adult females which were observed along the route were recorded. Survey participants were required to commence each walk between 22.00 and 23.00 hours, and to terminate by 00.00 hours, as suggested by Gardiner & Tyler (2002. Are glow-worms disappearing? *British Wildlife* **13**: 313-319). Adult females usually start glowing after sunset when the light falls to a certain level (which during the summer is generally between the hours previously mentioned), although there is no scientific data that quantifies the required light intensity for glowing to commence. Females may also have an internal 'clock' which regulates when they glow each day, for example, females kept in complete darkness glow once a day as they would in the field (Tyler, 2002). Most females have been observed to stop glowing after 00.00 hours.

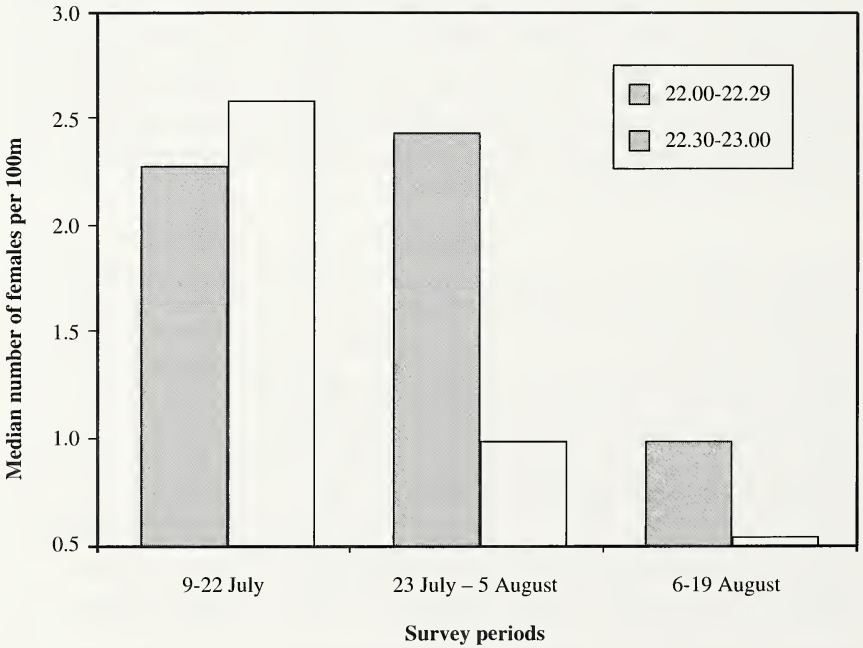


Figure 1. Density of adult female *Lampyris noctiluca* for surveys starting between 22.00 – 22.29 hours and 22.30 – 23.00 hours in the three survey periods.

A slow strolling pace (average walking/searching speed was 0.7 km/hour) was recommended for the walks to reduce the risk of overlooking glowing females along the route. Most walks were fairly short in duration (average survey time of 37 min).

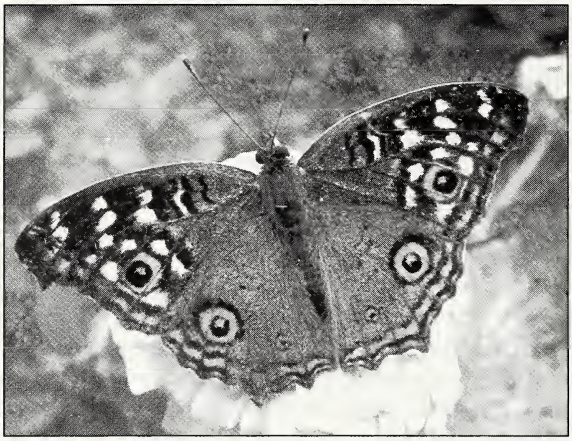
It has become evident that survey start time has a significant effect on counts of females. In period 1, there was no real difference between counts of glowing females from surveys that started between 22.00-22.29 hours and 22.30-23.00 (Figure 1). Sunset times (for London) for this period were 21.16 on 9 July and 21.03 on 22 July, so most surveys were starting approximately one hour after sunset. However, as the monitoring progressed into late July/early August (periods 2 and 3), surveys that started between 22.30-23.00 yielded extremely low counts in comparison to those commenced between 22.00-22.29 h (Figure 1). As sunset times became earlier in periods 2 (21.02 on 23 July, 20.41 on 5 August) and 3 (20.40 on 6 August, 20.15 on 19 August) it is clear that less females were seen after 22.30 hours. This may be due to earlier 'lighting up' times in late summer (other surveys found females glowing as early as 21.35 and 21.00 in periods 2 and 3 respectively) leading to the majority of females having mated and stopped glowing (Tyler, 2002. *The Glow-worm*. Lakeside Press, Sevenoaks), before the later surveys, after 22.30, commenced.

In conclusion it is crucial that criteria for surveying glowing females reflect the earlier sunset and 'lighting up' times (of females) in late July/August. Surveys in late July/August should start as close to 22.00 h as possible to avoid low counts of glowing females. It is also important to remember that the light level needs to have fallen sufficiently (e.g. difficult to make out colours) before females 'light up' and the survey can commence (Tyler, 2002).— Tim Gardiner, Centre for Environment & Rural Affairs (CERA), Writtle College, Lordship Road, Writtle, Chelmsford, Essex CM1 3RR (E-mail: tg@writtle.ac.uk).

Hazards of butterfly collecting. From the Nilgiri to the Biligiriranga Mountains, South India, 1986

On 30 May, 1986 I woke up in a rather crummy guest house of the Glenburn Estate in the Nilgiri Mountains in southern India – I had already been advised that the better one was being renovated. I had been rudely expelled from my comfortable lodgings 30km away in Kotagiri and 600m up. Actually, rudely is not the correct term. When I took up residence for six months in Kotagiri at the old boarding-school, where I had earlier lived between the ages of 10 and 14, I was warned that my stay would be disrupted. The caveat was issued by the last Danish missionaries in India – two splendid ladies running a couple of universally acclaimed secondary schools for girls in Tamil Nadu.

My eviction had been tempered by the ladies bringing me a huge stack of Danish newspapers and magazines. My aspirations for the first day in exile were simple. I would sit on the porch, admiring the splendid view, dipping into the jack-fruit that had thoughtfully been provided by my host, and perusing the Danish press. This was not to be.



Just after settling on the porch with a Danish paper it became evident that a large butterfly migration was beginning: slightly tentative at 08.00 hrs, quite clear half an hour later. Newspapers had to be exchanged for butterflies. The lead species was the Lemon Pansy (*Junonia lemonias* L., 1758) with some 33% of the total (see photo). Second was the Yellow Emigrant (*Catopsilia pomona* Fabr, 1775) with 21%, then the danaid Southern Blue Tiger (*Tirumala septentrionis* Butler, 1874) with 13% and two Crows which could not be told apart on the wing (*Euploea core* Cramer, 1780 and *E. sylvester* Fabr., 1783) with about 10%. These species constituted three-quarters of the entire migration, but another twenty were also involved (Larsen, T.B., 1988. *Atalanta* **18**: 267-281).

The next three days things were very similar – and I kept maintaining my counts. I also drove up and down the mountain to calculate the width of the migration – about 35–40 km. The migration density, species composition and behaviour were the same everywhere, but numbers fell away at the edges of the main track of the migration.

Then at about 10.00hrs on 2 June something strange happened. A smaller migration started moving at almost right angles to the main migration, flying north instead of nearly east. Most of the same species were involved, but in very different proportions (*J. lemonias* was only 8% of the total while the two Crows had 29% between them). At any given time I could see about 100 migrants – there was never the least doubt as to which of the two streams any individual belonged. I concentrated on observing a change of direction in any butterfly – I never saw one. And whenever a resident butterfly – whether or not a potential migrant – wandered into the stream of migrants it flew about with no thought of what was happening around it (the simile of a 'streaker' invading the immaculate military performance of the "Beating of the Retreat" struck me as apposite).

Nearly all migration observations are snapshots of what happens in one place at one moment in time. Here, for the first time in my life, I was actually able to do a bit more. I had a car and the necessary freedom. I checked my maps. So I headed east to see if the situation was the same there in respect of the main migration. Well, I did not exactly head east, because the topography of Nilgiri Mountains does not allow this. I had to go far south to Coimbatore to join the only road that would re-connect me, I hoped, with the migration. This was a great experience. Less than an hour after leaving Glenburn, at the foot of the mountains, there was no sign of the migration.

I then had to drive some 50km south to get to Coimbatore and another 70 km to the road that poked east into the lowland gap which separates the Nilgiri from the Biligiriranga Mountains. Though 120km might not sound like much to most readers, the traffic and condition of roads in India combine to make this a bit of a hazardous journey – the mix of rickshaws, ox-carts, giant trucks in poor condition, and bicycles can be frightening.

This lowland gap (Bhavanisagar) is one of the driest localities in South India – almost African in character with gazelles and *Acacia*-trees. I once went down there to find *Colotis* orange tips behaving just like in Africa (six *Colotis* were originally described from India: one of these is endemic, the rest also found in Africa, where an additional 40 species occur). In the early afternoon I arrived at the spot on the road where I had plotted that the migration ought to reappear. With great precision, and to my great pleasure, it did – and at the very point indicated by my advance plot. I continued for a while, then stopped to do a count. It was identical – species composition, flight pattern, general behaviour – with what I had seen at Glenburn, 60km to the north at 1,300m. In Glenburn they were overflying vigorous forest and wet tea plantations – their behaviour was the same over the driest possible savannah at 500m. I have found no record of a similar "chase". The ideal would be to have the services of a helicopter that does not need to contend with the ox-carts!

After a few additional counts I went up the long winding road to the top of the Biligiriranga Mountains. My strange activities in the Nilgiri Mountains had exaggerated my scientific importance among the plantation communities, so I was well received in the sprawling coffee and spice plantation on the hills – despite the lack of advance warning. A discreet consultation amongst the senior resident staff resulted in my being given the palatial bedroom used by the managing director from Bombay on his one or two annual visits (I have never seen a morning 'bed-tea' so dwarfed by its surroundings). The area was north of what was evidently quite a narrow migration, perhaps only 40-50km wide. So during the next two days I was treated to a thorough and most interesting lesson in how cinnamon, cloves, mace, ginger, and other spices were grown. I also looked at my data. From what I personally saw, it was possible to extrapolate a minimum of 4.3 million butterflies in the main flight over a 40km front. The data also indicated a 1:1 sex ratio.

That we do not know more than we do about butterfly migration is quite scandalous. Each time I look at the cases I have been fortunate enough to witness, I also feel a nagging guilt. Could I not have done more? My maps showed me that it would be a detour of more than 250km to find the next potential intersection point with the migration, almost hitting Coimbatore on the way – and then a two or three day drive back to Glenburn. I did not do it. I am sorry I did not ... and I apologize – to my reader as well as to myself.

When I was back at Glenburn, no sign of migration remained.— Torben B. Larsen, UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland.

A further study of the behavioural patterns of five species of British butterfly whilst *in copula*

Between 1995 and 2005 I have been fortunate enough to five species of British butterfly in copula. I now describe their behavioural patterns. This follows my earlier observations on twelve other species (Knill-Jones, 1989. *Br. J. ent. Nat. Hist.* **2**: 139-141; 1995. *Br. J. ent. Nat. Hist.* **8**: 7-10).

Dingy Skipper *Erynnis tages* L. (Hesperiidae)

23 May 1995 was a warm & sunny day with a temperature of about 20°C, when my Mother and I decided to go to the chalk pit on Compton Down to observe the butterflies there. I had not been there long when, at 13.50 hours, I noticed a pair of Dingy Skippers *in copula* that had settled on the tip of a dead stem. The female was freshly emerged and faced upward in a north-westerly direction and its more worn mate faced down the stem towards the south-east. Both had their wings open with the female (each wing) held at an angle of 45 degrees and the male at 60 degrees. Throughout the whole time that they were *in copula* their wings remained open, with the female opening them from a minimum of 5 degrees to a maximum of 60 degrees and the male from 30 degrees to having them fully open at right angles at 14.15 hours, just prior to separation.

Except for noticeable movement of the male's abdomen they did not change their positions on the stem except with the slight opening and closing of their wings. At 14.16 hours there was considerable movement up and down the stem as they tried to separate. At 14.17 they separated and both flew off at the same time before alighting on nearby plants with their wings fully open. It was observed that the female was the more passive partner. They had been *in copula* for 27 minutes, which compares to 32 minutes for the Grizzled Skipper (*Pyrgus malvae* L.) although in neither case was the actual mating witnessed.

Small Blue *Cupido minimus* (Fuessly) (Lycaenidae)

2 May 1995 was a very warm and sunny day when my Mother and I decided to go to the chalk pit on Compton Down to see if there had been an early emergence of the Small Blue. At 12.08 hours, I noticed a pair *in copula* which had just mated alighting on a piece of Goose-Grass *Galium aparine*. The male, being slightly larger, faced north with each of its wings held at an angle of 45 degrees and the female faced south with its wings tightly closed. At 12.12 hours the male closed its wings for about thirty seconds before opening them again. At intervals of about ten minutes the male likewise closed its wings briefly; the wings of its mate were closed during the whole time whilst they were *in copula*. This continued until 12.49 hours when they both closed their wings remaining like this until separation took place. At 12.19 hours. there was slight leg movement in the female and this was repeated on a couple of occasions. At 12.12 they changed their positions with the male facing south-west and the female south-east; at 12.22 they moved back to their original positions of north and south. At 12.43 they moved slightly to alter their positions with the malefacing north-west and its mate south east. At 12.49, with their wings closed,

they moved and both faced north; at 12.57 they moved down the stem, with the male above, and they both faced in a westerly direction. At 13.07 there was considerable movement and a minute later they separated, when the male opened its wings and flew off. The female opened its wings fully and dispersed thirty seconds later.

They had been in copula for exactly an hour; this is twice as long as *Polyommatus icarus* (Rott.) and half the time of *Lysandra coridon* (Poda). I saw about a dozen in all of this butterfly during this very forward spring and I also observed a second pair nearby *in copula*. I noticed that the male carried the female whilst in flight.

Brown Argus *Aricia agestis*(D. & S) (Lycaenidae)

It was a warm and sunny morning on 20 May 2001, when I decided to go to Afton Down to observe the butterflies there. At 10.15 hours I noticed a pair of *Aricia agestis in copula* on a blade of grass. The male was facing due east and the female faced north-north-east. Both of their wings remained tightly closed whilst they were *in copula*. Their bodies pulsated rhythmically all the time whilst sperm was being passed to the female. At 10.43 there was considerable movement although their wings remained closed before they separated and flew off together. Only a foot away I observed a pair of Dingy Skippers *Erynnis tages*, also *in copula* which, unlike *A. agestis* had their wings fully open to the sun. These were still *in copula* when I left after thirty minutes. The pair of A. *agestis* had been *in copula* for 28 minutes although the actual mating was not observed.

Adonis Blue *Lysandra bellargus* Rott. (Lycaenidae)

7 June 2005, turned out to be a lovely sunny day heralding the beginning of Summer and I went to the chalk pit on Aft on Down to observe there. At 14.15 hours I noticed a pair of Adonis Blues *in copula* on a blade of grass. Both had their wings closed with the female facing south and the male facing north. A few minutes later the male opened its wings at 45 degrees facing north-west end its mate slightly opened its wings at 10 deg. At 14.20 they moved slightly and closed their wings with the male facing east and the female facing west. The female was in a horizontal position while its mate was vertical. At 14.23 the male opened its wings to 45 degrees while the female had its wings closed. At 14.24 they moved a foot up a grass stem; both had their wings closed with the female facing west and the male facing south-east. At 14.25 they moved several inches onto a Bramble leaf. The female had its wings open at 45 degrees facing east and its mate was facing west with closed wings. At 14.32 they moved several inches and both-had their wings closed with the female facing east and the male facing south west. At 14.25 they moved again with the female facing south and the male facing north with both wings closed. At 14.40 there was more movement and the male opened its wings facing south and the female faced north-west with closed wings. At 14.41 they moved to grass stem with the male facing south-east and the female facing west with both wings closed. At 14.43 they moved and the female opened its wings to 45 degrees, facing west and the male faced south-east with closed wings. Two minutes later the female closed her wings.At 14.57 they moved to a brample leaf with both wings closed. At 15.00

hours, both wings were closed with the male facing south-east and the female facing north-west. At 15.01 they moved and had their wings open briefly. At 15.06 they moved down a grass stem with both wings closed and then moved up the stem where they both briefly opened their wings to 45 degrees. At 15.11 they separated, with the male flying off first shortly followed by its mate. It was noticed that the male carried the female whilst in flight. They had been, *in copula* for at least 56 minutes.

Date	Species	From	To	Duration (hours: minutes)
17 Apr 1989	*Pararge aegeria* (L.)	12.00	12.05	0: 05
23 May 1985	*Erynnis tages* (L.)	13.50	14.17	0: 27
20 May 2001	*Aricia agestis* (D.& S.)	10.15	10.43	0: 28
19 Sep 2001	*Polyommatus icarus* Rott.*	11.54	12.25	0: 31
13 May 1984	*Pyrgus malvae* (L.)	12.28	13.00	0: 32
7 Jun 2005	*Lysandra bellargus* (Rott.)	14.15	15.11	0: 56
2 May 1995	*Cupido minimus* Fuess.*	12.08	13.07	1: 00
16 Aug 1997	*Coenonympha pamphilus* (L.)	15.11	16.12	1:01
4 Aug 1991	*Thymelicus sylvestris* (Poda)	11.23	12.36	1: 13
3 Aug 1994	*Maniola jurtina* (L.)	15.05	16.25	1: 20
7 Jul 1984	*Melanargia galathea* (L.)	10.45	12.20	1: 35
28 Jul 1981	*Pyronia tithonus* (L.)	15.22	17.05	1: 40
12 Sep 1984	*Pieris rapae* L.	16.30	18.15	1: 45
27 July 1984	*Lysandra coridon* (Poda)*	10.40	12.45	2: 05
31 May 1984	*Callophrys rubi* (L.)	11.48	14.25	2: 57
26 Sep 1983	*Lycaena phlaeas* (L.)*	11.35	14.40	3: 05
11 Jun 1994	*Melitaea cinxia* (L.)*	10.39	14.34	3: 55

Table 1. Duration of copulation of butterflies.

Small Heath *Coenonympha pamphilus* (L.) (Nymphalidae)

On a sunny, but rather misty afternoon on 16 August 1997 my Mother and I went to the chalk pit at Afton Down to observe the butterflies. At 15.11 I disturbed a pair of *Coenonympha pamphilus in copula* whilst walking through the grass. They flew for a few yards before finally alighting on a horizontal grass stem. The female faced east-north-east and the male which was directly beneath her faced in the same direction. I noticed that the female carried the male whilst in flight. Through out the whole time that they were *in copula* both of their wings were kept tightly closed and the only movements came from puffs of wind and when they changed their positions with the sometimes hazy then bright sunshine. At 15.50 there was slight movement when they changed position with the female facing due north and its mate facing

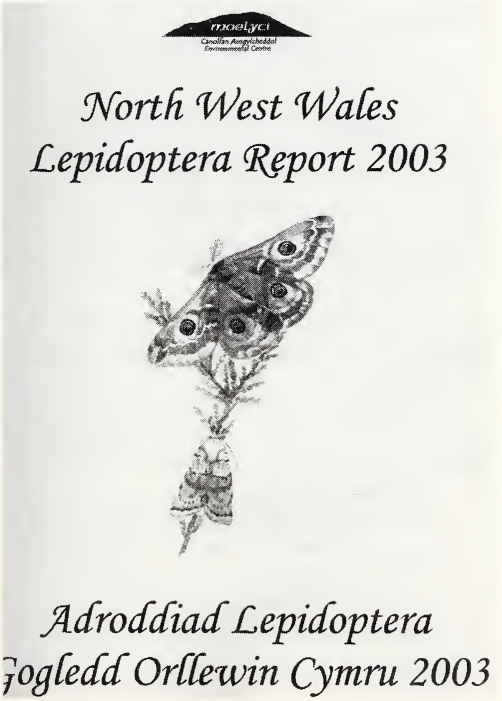
north-north-east. At 16.06 hours there was again slight movement when the male moved position to face north-north-west. At 16.12 hours they separated and both opened their wings for the first time. The male moved north up the stem and after twenty seconds flew off whilst the female moved south down the stem and departed ten seconds later. They had remained *in copula* for one hour one minute.

Table 1 shows the durations, in order of time spent *in copula*, for the 17 species that I have observed over the last twenty years. An asterisk (*) denotes a species in which the actual mating to the time of separation was observed.

I should like to thank Dave Wooldridge for reading and commenting on the manuscript of this Note.— SAM KNILL-JONES, 1 Moorside, Moons Hill, Totland, Isle of Wight P039 OHU.

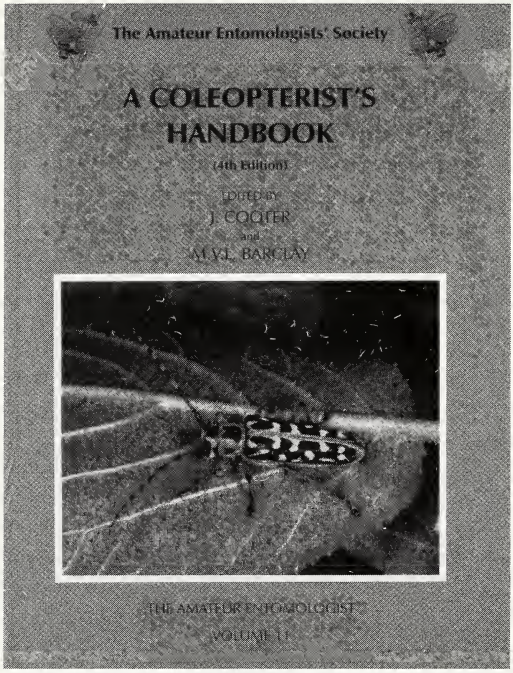
BOOK REVIEWS

North West Wales Lepidoptera Report 2003 (***Adroddiad Lepidoptera Gogledd Orllewin Cymru***) compiled by **John Harold & Andrew Graham.** 196 pp. A4, comb-bound. Published with financial support from Butterfly Conservation North Wales and North Wales Wildlife Trust. Supplied free to contributors of records; non-contributors obtain copies from John Harold, Hen Ardd, Carreg y Gath, Rhiwlas, Bangor, Gwynedd LL57 4HD.



This is the third volume in the annual series reporting moths in Vice-counties 48 (Merionethshire), 49 (Caernarfonshire) and 52 (Anglesey), previous issues covering the years 2001 and 2002 (the volume covering 2004 is currently in preparation). A short introductory section in both English and Welsh precedes the species accounts for the year. The report includes records of 852 species of moths from 48 families and is essential reference for anyone at all interested in the moths of this interesting part of the British Isles.

A Coleopterist's Handbook (4th Edition) edited by **J. Cooter and M. V. L. Barclay**. 439 pp., 152 x 217 mm, hardbound. ISBN 0 900054 70 0. Published by the Amateur Entomologists' Society, 2006. £54 inc p&p. Available from AES Publications, 1 Tower Hill, Brentwood, Essex CM14 4TA (aespublications@btconnect.com).



The *Coleopterist's Handbook* has been, and continues to be, an absolutely essential work of reference for all coleopterists, from beginners upwards, since it was first published in 1954 under the general editorship of W. J. B. Crotch. Subsequently updated and revised in both 1974 and 1991, we now have the excellent fourth edition, complete with a splendid set of coloured plates.

There is little that this new version does not include. An authoritative introduction to the beetle families starts things off, including a checklist of modern family names before each family is discussed in turn by the various contributing specialists. This takes us from page 1 to page 199 and so takes up about half of the work. Although keys to species are absent, pretty much everything else a beetle enthusiast might want to know is here. Subsequent chapters cover, in considerable detail, methods of finding, collecting, preserving and identifying beetles including a detailed section on the examination of genitalia – essential for naming many species. There is also a section on breeding beetles, as well as headings such as Conservation, Creating a database and Recording.

Clearly this tome contains so much information that the reviewer has been quite unable to digest it all – to do so would probably mean waiting a year for the review. However, having read previous editions, it is clear that this revision makes several important changes as well as introducing modern concepts such as computerised record-keeping – quite unheard of in the first edition! This book is a very well-presented easy to understand work that forms perhaps the single most important contribution to the British Coleoptera literature for many years and is thoroughly recommended as absolutely essential for anyone with even the remotest interest in studying beetles. All that we who are not experts now need is a revised checklist and some workable keys to identify species in families that were last keyed out in Joy's 1932 *Practical Handbook* or in some obscure and long out of print publication of the Royal Entomological Society. If this too can be achieved, to complement this critically important, if somewhat expensive, revised handbook, I predict a happy and glorious future for coleopterology in this country.

Colin W. Plant

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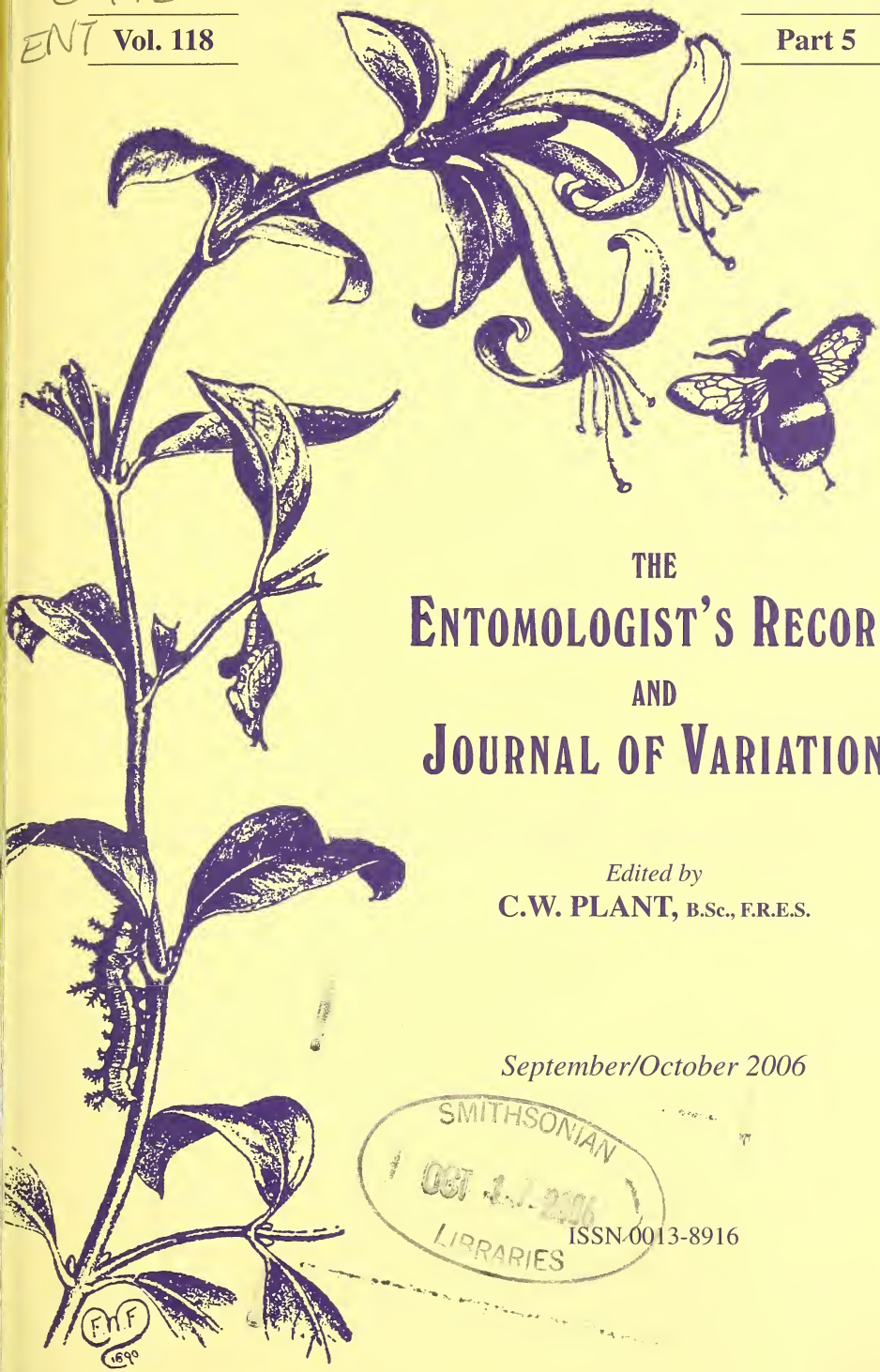

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Editor

C.W. PLANT, B.Sc., F.R.E.S.

14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

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Editorial Notice: An outbreak of the Oak Processionary moth *Thaumetopoea processionea* (L.) (Lep.: Thaumetopoeidae) in south-west London

During late summer 2006, Oak Processionary moths were found breeding at three separate sites in south-west London. Adults moths were reported at light traps in nearby areas during the period in which the locally bred moths were emerging. It is unclear if these outbreaks result from accidental introduction or natural colonisation through immigration. All previous British records have been of immigrant males along the south coast from Cornwall to Essex.

The Oak Processionary moth presents an extremely serious threat to both the British landscape and to human health; it is of the utmost importance that any so far undetected colonies are eradicated. The adult moths fly in August, but in some years also into September. Since, as I type this Note, it appears that we may be in for some warm weather during September, this must surely increase the likelihood of moths persisting. If adult moths are indeed trapped it will be possible during 2007 to target the areas where they have been recorded and destroy larval nests that arise from over-wintered egg masses.

The larvae form communal nests on the trunks of oak trees, usually at the edges of woods or in open spaces rather than in the centre of forests. There are currently some good images of larvae and nests at *http://www.ipmimages.org/browse/subimages.cfm?SUB=13403* whilst adults are illustrated along with other related species in de Freina, J. J. & Witt, T. J., 1987. *Die Bombyces und Sphinges der Westpalaearktis.* Verlag, Munich and doubtless elsewhere. After emergence, the silk nests and empty pupal cases remain visible for some while on the trunks and can be searched for in September and October. The larvae cause huge environmental damage by their rapid defoliation of oak woodlands. Spraying of insecticides seems to be largely ineffective, but kills almost everything else; the environmental consequences of such action in a small island like Britain are horrifying. Like the Brown-tail *Euproctis chrysorrhoea* (L.) the caterpillars cause a severe reaction in humans. However, unlike the larvae of Brown-tail whose long hairs are urticating, the reaction to Oak Processionary larvae is caused by a toxin in the shorter body hairs. The symptoms may be extremely severe and the case of invalids or babies may, on rare occasion, be life-threatening. Doctors in the area around the known outbreaks have been informed, but there is a clear risk that visitors to local tourist attractions may have come from all over Britain and return to areas where most doctors will be unaware of the symptoms.

Entomologists in south-west and west London and adjacent areas of Surrey, Berkshire, Buckinghamshire and Middlesex in particular are asked to report all sightings/captures immediately – not waiting until the end of the year. Since one sighting was associated with the A40 trunk road, there is a possibility that road transport is a source of that infestation and it is wise to consider searching the A40 corridor as far west as Oxford. The outbreak and control of Oak Processionary is being monitored by Martin Townsend, to whom all information should be sent at 69 Alice Smith Square, Littlemore, Oxford OX4 4NQ (or via e-mail to: martin.townsend4@ntlworld.com). Dead specimens for confirmation are welcomed by Martin, but please include return postage if you would like him to return them.

Male genitalia in *Dioryctria abietella* (D. & S.), *D. simplicella* Hein. and *D. sylvestrella* (Ratzeburg) (Lep.: Pyralidae)

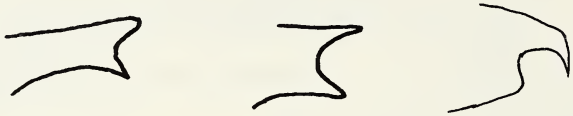

Figure 1. Tips of valves of British *Dioryctria* species. Left to right: *D. abietella, D. simpliciella, D. sylvestrella.* A fourth species, *D. schuetzeella* is not drawn.

May I draw to readers' attention the usefulness of the male genitalia in this rather difficult group of moths, and that they can be examined *in situ*? I had been growing increasingly uneasy about my determinations based largely on the subterminal line of the forewing and wingspan, and when I was lent a copy of the now out of print work by Palm (1986. *Nordeuropas Pyralider.* Fauna Bøger), I resolved to dissect them all. I dissected a couple, and then realised that the characters might be made visible by brushing the scales from the tip of the abdomen of set specimens. I did this with the remaining four specimens, two *D. abietella* and one each of *D. simplicella* and *D. sylvestrella.* None proved difficult to assign, though I think that with *D. abietella* and *D. simplicella* the task became easier with both species present. *D. sylvestrella* is particularly obvious. The valve is broad, and its lower margin is poorly chitinized, appearing pale like tissue paper and being easily damaged whilst brushing off scales. In *D. abietella* the apex of the valve ends in a sharp angle, whilst *D. simplicella* has a short broad spine. Both species have a spine just below the apex of the valve. I have no material of *D. schuetzeella* Fuchs, but as this is said to be the most distinctive of the four species, examination of the genitalia is probably not going to be needed. I should say that examination of my limited material of these species revealed that my determinations based on size and subterminal line had been little better than random. Anyone practiced in the use of a hand lens should be able to pick out *D. sylvestrella*, but I think a microscope would be necessary to distinguish *D. simplicella* and *D. abietella*. Pierce's drawings in Pierce & Metcalf (1938. *The Genitalia of the British Pyrales with The Deltoids and Plumes*) are correct, but the difference between *D. abietella* and *D. simplicella* (shown under the previous name of *mutatella*) seems somewhat exaggerated, whilst the apex of the valve of *D. sylvestrella* (under the name *splendidella*) is poorly drawn. Parsons and Clancy (2002. *Dioryctria sylvestrella* (Ratz.) – New to Britain and Ireland and the Identification of the British *Dioryctria* species. *Atropos* **15:** 16-19) warn that the genitalia of *D. simplicella* and *D. abietella* are very similar and variable, so much so that it can be difficult to determine these species on dissection. In my small series I encountered no such problem, but it may be that there is a small proportion where the tip of the valve is intermediate between an angle and a spine. — RICHARD DICKSON, 39 Serpentine Road, Fareham, Hampshire PO16 7ED (E-mail rdickson@fish.co.uk).

EMMELINA ARGOTELES (MEYRICK, 1922) (LEP: PTEROPHORIDAE) – A NEWLY RECOGNISED BRITISH PLUME MOTH

JEFF B. HIGGOTT

42 Valleyview Drive, Rushmere St. Andrew, Ipswich, Suffolk IP4 5UW.

Abstract

The plume moth *Emmelina argoteles* (Meyrick) (Lep.: Pterophoridae) is recorded new to the British fauna from Wicken Fen, Cambridgeshire in 2005 and 2006. The overseas distribution of *argoteles* and differentiation from *Emmelina monodactyla* are discussed.

Introduction

A moth trapping session on 24 June 2005 at Wicken Fen (National Trust), Cambridgeshire (VC29, O.S. grid reference TL 5670) with Stuart Read was largely uneventful due to poor weather. Amongst unidentified moths a brown plume moth taken at 125W mercury vapour light was retained for later confirmation. Expecting this individual to be a small *Emmelina monodactlya*, I was surprised to find on genitalic examination that this male specimen was a good match for *E. argoteles*, based on the illustration and description in Gielis (1996). The identification was confirmed by Cees Gielis (pers. comm.) and this record constitutes the first record for Britain of *Emmelina argoteles*.

During a further visit to Wicken Fen a year later on 5 July 2006 another (male) specimen of *E. argoteles* was obtained at MV light in the same compartment of the nature reserve (Sedge Fen).

Taxonomic position and identification

In his book, Gielis (*op. cit.*) describes *E. argoteles* as indistinguishable on external characters from the widespread *monodactyla*. Comparison of the Cambridgeshire specimens (Plate L) with a short reference series of *monodactlya* uncovers nothing to contradict this statement. The overlap in published wing spans of the two species is large: 18-27mm for *monodactyla* and 18-23mm for *argoteles*. However with a wing span of 19mm (both individuals) the Wicken specimens of *argoteles* may suggest that this species averages smaller than 'typical' East Anglian *monodactyla* (c22-25mm) and that this may provide an indicative (but far from conclusive) character for the species.

The male genitalia of the two European *Emmelina* species do differ significantly. Male *argoteles* (Plate M) can be readily identified by the broadened cucullar process of the left valve and shape and reduced saccular ornamentation of the right valve (Gielis, 1996). In contrast, the differences between the female genitalia of *argoteles* and *monodactyla* are small. Gielis cites a more developed ostium in *argoteles* and a greater width to the ostium and antrum structures.

In line with Gielis' European treatise on the family, *Emmelina argoteles* should be listed after *monodactyla*, providing it the species number 1524a consistent with the Bradley (2000) checklist.

Distribution and habitat

The occurrence of *Emmelina argoteles* in Britain is not surprising given the close proximity of its distribution in mainland Europe. The species has a discontinuous global range, being found as near as France (Normandy, the Alps and Bouches du Rhone), as well as Germany (Nordrhein-Westfalen and Pfalz), Austria, Spain (Vizcaya), Hungary and Corsica. Outside Europe the species occurs in the Far East in Japan and China (Cees Gielis, pers. comm.). The literature suggests that *Emmelina argoteles* may be typically more closely aligned with damper habitats than the widely distributed *monodactlya*; the latter is also recorded at Wicken Fen and was trapped alongside *argoteles*.

Biology

Emmelina argoteles is poorly researched species with few published references. Its larval host plant preferences are similar to those of *monodactyla*, including *Calystega sepium* (L.) and *Ipomoea batans* L. (Yano, 1963). The former is a common plant at Wicken Fen. There is clearly a need for more work to understand the sympatric relationship between the two species.

Remarks

With the recording of *Emmelina argoteles* at Wicken Fen in both of the last two years it seems likely that this species is a previously overlooked resident at the site. Further work is required to understand the full distribution of the species in the UK, its status and environmental needs. If the species can be confirmed as a breeding species its conservation status will need to be assessed.

Acknowledgements

I am grateful to Cees Gielis for his confirmation of the first Wicken Fen specimen. Brian Goodey's skills in the preparation and photographing of the genitalia slide of the first specimen were critical in the confirmation of the record.

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Plate L. *Emmelina argoteles* (male), Wicken Fen, Cambridgeshire, 24 June 2005 (Photo: Jeff B. Higgott).

Plate M. *Emmelina argoteles* (male genitalia), Wicken Fen, Cambridgeshire, 24 June 2005 (Photo: Brian Goodey).

THE EARLY STAGES OF *ELACHISTA NOBILELLA* ZELLER (LEP.: ELACHISTIDAE)

G. A. Collins

15 Hurst Way, South Croydon, Surrey CR2 7AP (stigmella.aurella@tiscali.co.uk)

Abstract

The mine, larva and pupa of *Elachista nobilella* are described.

Introduction

Collins and Porter (2005) added *Elachista nobilella* to the British list on the basis of adults caught at two sites in Surrey. In that paper it was suggested that Wavy Hair-grass *Deschampsia flexuosa* was a likely foodplant as it is amongst several species mentioned in the literature and also the dominant grass species at the main site where the adults had been taken.

This site was visited on 11 April 2005 and mines were soon found on *Deschampsia*. Some had already been vacated despite the relatively early date. A number were taken for subsequent examination and adult moths reared to confirm the species involved. From eight mines kept, six pupae were obtained, all of which hatched. No parasitism was observed.

The mine

The mine of the mature larva commences 5-10 mm below the leaf-tip and extends up to 80 mm where the leaf allows. It occupies the whole "width" of a blade of *Deschampsia*. The full-grown larva is at least as wide as the diameter of the blade and the whole of the mesophyll is eaten with the exception of a narrow linear area which lies alongside an invagination of the blade wall. The mine posterior to the larva is silvery-white with the frass deposited in a fairly straight line down one side. The yellowish colour of the larva is visible through the mine, and since the fully grown larva is wider than the blade, the mine is swollen at this point. Mined leaves are thus distinct from leaves in which the apex of the leaf has died and become brown.

Unlike most leaf-miners, elachistid larvae can, and when feeding on narrow-leaved grasses probably routinely do, change leaves. The mines found had distinct entrance holes at the upper end and it is very likely that the larvae had mined other leaves first. The oviposition site and overwintering stage have not yet been established.

The Larva

The description of the larva is based on examples that had left the mine to pupate. Body whitish-yellow. Head pale brown, rather rounded, only slightly longer than wide. Crotchets of prolegs black, and segments of thoracic legs marked darker, visible through the mine. Prothoracic plate weakly sclerotised, pale brown, divided into four areas, the anterior pair elongate and diverging posteriorly, the posterior pair more rounded and transverse. The plate finely longitudinally striate.

The Pupa

3.0—3.2 mm long, uniformly pale yellowish-brown. Thorax with dorsolateral raised ridges, and three raised, roughened tubercles at the bases of the wings. Wing-cases and legs extending to apex of abdominal segment V, the former roughened but without distinct tubercles. Abdominal segments fused, except for the articulation between IV and V, and V and VI which is present as a deep dorsal sulcus. Prominent raised dorsal and prominent lateral keels present, interrupted by the sulci between the movable segments. Cremaster of four groups of spines ventrally on IX-X, the spines rather long and abruptly expanded at their tips. Caudal projection of X small, wider than long. The surface sculpture of the abdominal segments consists of a mixture of whorled wrinkles and areas of dense punctation, the surface between the punctures rather smooth and shining.

In captivity the larvae chose to pupate in an angle of their container, spinning a full length, transversely arranged sheet of silk above them, and attached by the cremaster and a girdle which engages with the dorsal sulcus between IV and V. This mode of pupation suggests that the larvae do not pupate on the stems of *Deschampsia*, but rather seek out some broader and flatter surface, perhaps on a dead leaf below the grass.

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First record of a grasshopper, *Myrmeleotettix maculatus* (Thunb.) (Orth.: Acrididae), from the Isle of Lewis

Surprisingly, according to the national atlas (Haes, E. C. M. & Harding, P.T. 1997. *Atlas of grasshoppers and allied insects in Britain and Ireland*), there are no records of grasshoppers from the Isle of Lewis, even though it is the largest of the Hebridean islands. On 25.vii.2006 I found numbers of *Myrmeleotettix maculatus* (Thunberg) at the boundary of dunes and machair, north of the beach at Mangersta (O. S. grid reference NB 009310) and a single male to the south of the beach in dunes at NB 009308. This species is already well known from other islands in the Hebrides. My own records include: Tangasdale, Barra, dunes, viii.1981; Ruleos, Barra, dry peat moor, viii.1981; Iona, dunes, viii.1984; Loch Aineort, South Uist, peat moor, 22.vii.2006; Udal, North Uist, machair, 23.vii.2006. It is possible that the Mangersta site represents an isolated population as much of Lewis is covered by damp exposed moorland that may be unsuitable for this insect. On a previous visit to Lewis, in 1988, I failed to find grasshoppers despite searching dune and machair areas near Uig Sands, Cliff and Kneep.— John Paul, Downsflint, High Street, Upper Beeding, West Sussex BN44 3WN (E-mail: turbots@btinternet.com).

Etiella zinckenella (Tr.) (Lep.: Pyralidae) in North London: Fifth and sixth British records

On 27 July 2006 I found a phycitine pyralid, with extremely modified basal antennal segments, that I did not recognise in my garden mv trap It did not appear to be illustrated in Goater (1986. *British Pyralid Moths*) and so I retained the specimen for

Plate N. *Etiella zinckenella* (Tr.) (Pyralidae), male, Hornsey, Middlesex, 27.viii.2006 (M. J. Ashby).

Plate O. same – detail of basal antennal segments.

identification. On 9 August 2006, I showed the specimen to Colin Plant who immediately recognised it as a male *Etiella zinckenella* and I was able to compare it to European examples in his collection. Returning home that afternoon, almost two weeks after catching the specimen, I began to inspect the previous night's catch, which I had not found time to examine in the morning. I was astonished to find another example of *E. zinckenella* in my mv trap, this time a female. I immediately telephoned Colin, who suggested that I should contact Bernard Skinner in order to shed light on its current status. Mr Skinner informed me that my two

specimens are the fifth and sixth records for Britain. The British records, in chronological order, are now as follows:

Bradwell-on-Sea (South Essex, VC 18), 23 October 1989 (A. J. Dewick), given in Bretherton, R. F. & Chalmers-Hunt, J. M., 1990, The immigration of Lepidoptera to the British Isles in 1989. *Ent. Rec.* **102**: 153;

Warsash, (South Hampshire, VC 11), 1 October 1990 (P. M. Potts per J. R. Langmaid. *Br. J. ent. Nat. Hist.* **4**: 31);

Christchurch, (South Hampshire, VC 11), 10 August 1995 (Jeffes, M., 1995. *Ent. Rec.*. **107**: 291 – 292), identity confirmed by Barry Goater. Agassiz, D. J. L., Heckford, R. J. & Langmaid, J. R., 1997, *Ent. Rec.* **109**: 186 include this record in their review of microlepidoptera for 1995, but list it for 11 August, which is the morning the trap was examined rather than the conventionally recorded date of capture;

St Agnes, Scilly (West Cornwall, VC 1), 20 July 1996 (J. Hale & M. Hicks), given in Agassiz, D. J. L., 1998. *Ent. Rec.* **110**: 113 and in Skinner, B. & Parsons, M., 1999. *Ent. Rec.* **111**: 153 – 183.

Hornsey, London N8 (Middlesex, VC 21), a male on 27 July 2006 and a female on 8 September 2006 (M. J. Ashby).

As this species does not yet appear to be figured in the British literature, the opportunity is taken to present a colour illustration here (Plate N) to facilitate recognition by others. The highly modified basal segments of the male antennae are perhaps distinctive – certainly interesting – and are separately illustrated in Plate O. According to Slamka (1997. *Die Zünslerartigen (Pyraloidea) Mitteleuropas*), the larvae feed in the seedpods of various legumes, including *Colutea, Sarothamnus, Phaseolus Pisum, Lupinus* and *Robinia*; some other notes on biology are given in Potts, *Ent. Rec.* **105**: 67. Although there was some immigrant moth activity at the time, because I trapped two examples in two weeks it seems possible that they may have emerged from imported beans or peas discarded in the area. The female was kept alive and given pea pods in an attempt to get her to lay, but she survived only a week and no eggs were produced.

I am grateful to Mr Bernard Skinner for giving me the dates and localities of the previous four British specimens. I am also grateful to Colin Plant for a literature search that revealed the original sources of the four previous records and confirmed that there were no others that had been overlooked. I am also grateful to Colin for photographing the images in the two plates. — M. J. Ashby, 30a Alexandra Road, London N8 0PP (E-mail: marcel.ashby@btinternet.com).

Eupithecia ultimaria Boisd. (Geometridae), _Cryphia algae_ Fabr. (Noctuidae) and _Hypena obsitalis_ Hb. (Noctuidae): Lepidoptera apparently breeding in Devon

Two examples of *Eupithecia ultimaria* Boisd., the Channel Island Pug, were taken at light on 21 and 28 July 2006, one on each date, at Holcombe, near Teignmouth. A follow-up survey was carried out at Sprey Point, Teignmouth on 2 August 2006 (the Holcombe trap overlooks this site although it is nearly a mile away). Tamarisk is the dominant bush here, and 18 larvae of the pug were beaten out of these bushes. These have since pupated and I await the images.

During the last week of July 2006, Bill Deakins recorded 3 individual specimens of *Cryphia algae* Fabr., the Tree-lichen Beauty, at his light in Ilsham Marine Drive, Torquay. On 9 August 2006, Barry Henwood and myself ran lights at Manor Wood, the nearest accessible woodland to the original capture. We caught 64 species at light including one *Cryphia algae*. Considering that we have now seen four specimens in this small area near Thatcher Point, Torquay, it can be assumed that we have the start of a colony of this species in this area of Torquay.

Following my report in *Ent. Rec.* **116**: 90. concerning over-wintering specimens of *Hypena obsitalis* Hb., the Bloxworth Snout, at Prawle Point, local naturalist Chris Proctor reported seeing "tens" of H. obsitalis over wintering in caves at Sharkham Point, south of Brixham and at Fishcombe Quarry, north of Brixham. Several *Scoliopteryx libatrix* L., the Herald, were also seen at the same time but, strangely, no butterflies. Roy McCormick, 36 Paradise Road, Teignmouth, Devon TQ14 8NR.

The Scarce Hook-tip _Sabra harpagula_ Esp. (Lep.: Drepanidae), new to The Channel Islands

This species, the first specimen for any of the Channel Islands, was caught in the Rothamsted Insect Survey light trap at Trinity on Jersey (trap number 547) on the night of 9 August 2005.

Sabra harpagula is a *Red Data Book* species on mainland Britain, where it is confined to the Wye Valley in Monmouthshire and Gloucestershire, the larvae feeding on Small-leaved Lime (Skinner, 1998. *The colour identification guide to moths of the British Isles*. Viking). Although the food plant is present on Jersey, it is most likely that this singleton was a vagrant from France (where it occurs throughout the country). This suggestion is substantiated by the date, which implies a second generation individual and bivoltinism is only known from mainland Europe; this is supported by the specimen being rather small, which is often the case in second generation Continental specimens (Waring, *et al*, 2003. *Field guide to the moths of Great Britain and Ireland*. British Wildlife Publishing).

Many thanks to Roger Long for information regarding the specimen and to Alex Vautier for the operation of the light trap.— Philip J. L. Gould, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

TRICHOPSOMYIA LUCIDA (DIPTERA: SYRPHIDAE): AN ADDITION TO THE BRITISH LIST, AND ITS SEGREGATION FROM RELATED SPECIES

MARTIN C. D. SPEIGHT

49 Mount Eagle View, Dublin 18, Ireland.

(E-mail: speightm@indigo.ie)

Abstract

Trichopsomyia lucida (Diptera: Syrphidae) is added to the British list, based on a recent specimen collected in London. A key is provided for its segregation from other European *Trichopsomyia* species. Available information about *T. lucida* is summarised.

Introduction

Three European species are consigned to the syrphid genus *Trichopsomyia*. One of these, *T. flavitarsis* (Mg.) is a recognised component of the British fauna, and has been for a long time. There has been confusion over the identity of one of the other species, finally resolved by Goeldlin (1997), who introduced the name *joratensis* Goeldlin for it, having established that the name *carbonaria* (Mg.), commonly-used for it previously, applied to a species belonging to a different genus. At Verrall's time (Verrall, 1901), both *T. joratensis* (as *Pipiza carbonaria*) and the third European *Trichopsomyia* species, *T. lucida* (Mg.) (as *Pipiza lucida*) had been included as British species by earlier authors. Verrall (1901) acknowledged the existence of these earlier references, but stated that he did not recognise *T. joratensis* as British. His treatment of *T. lucida* is ambiguous, in his section on "Reputed British Syrphidae" simply commenting that the species was "recorded by Stephens and others". In his treatment of *T. flavitarsis* (as *Pipizella flavitarsis*) he includes comment on his examination of the type material of *T. lucida*, making it clear that his concept of the latter species was of *T. lucida* as it is known today. He included neither *T. joratensis* nor *T. lucida* in his keys. If there were pre-Verrallian records of either species from Britain they have never been verified. Since then, neither *T. joratensis* nor *T. lucida* have been referred to as British species or included in keys to the identification of British syrphids.

Trichopsomyia lucida in Britain

During course of some rather casual syrphid collecting in the Abney Park Cemetery Nature Reserve, Hackney, London (Middlesex: VC 21; O.S. grid reference TQ 333868), on 2 August 2006, I came across a female of *Trichopsomyia lucida*. The spot where the specimen was found exhibited no features that might suggest the presence of habitat conditions unlikely to be repeated elsewhere within the Thames basin, or further afield in southern England, and it would be surprising if this urban site is the only British locality where the species occurs. However, if *T. lucida* has been collected elsewhere in the British Isles, it is unlikely that it would be recognised as a *Trichopsomyia* species by anyone using the most recent British syrphid identification literature. In the keys to genera given by Stubbs & Falk (1983)

and Ball et al (2002), *Trichopsomyia* is segregated from related genera by means of a venational character that, in *T. lucida* (wing figured by Verlinden, 1991 and van Veen, 2004), takes almost exactly the form figured there for *Heringia* and *Pipiza*, ensuring that *T. lucida* could not be recognised as a *Trichopsomyia* species. The likely outcome of trying to identify *T. lucida* by means of those keys is that it would run first to *Pipiza* and then (with some difficulty, since the wings are not infuscated) to *P. lugubris* or *P. noctiluca*. It would not correspond sufficiently closely to either *P. lugubris* or *P. noctiluca* to give much confidence in the determination obtained, but re-examination of British material consigned to these species might provide more British records of *T. lucida*.

A character that can be reliably used to segregate the genus *Trichopsomyia* in keys (and the character upon which the status of *Trichopsomyia* as a distinct genus is most dependent) is the presence of long hairs on the anterior, flat part of the mesopleur (usefully figured by Coe, 1953), these hairs being absent from this sclerite (mesanepisternite 1 of Speight, 1987; anterior anepisternum of Thompson and Rotheray, 1998 and Van Veen, 2004) in other European genera of Pipizini (except *Triglyphus*). These hairs can easily be seen in *T. lucida*. Insertion of a couplet using this feature, to segregate *Trichopsomyia* from the other Pipizini, after couplet 3 in the key provided by Ball et al (p.150) should ensure correct generic level recognition of all three European *Trichopsomyia* species. Alternatively, the key to genera provided by van Veen (2004) is also reasonably accessible and could be used for recognition of putative *Trichopsomyia* specimens. Keys differentiating the three European *Trichopsomyia* from one another are given in English by both Goeldlin (1997) and van Veen (2004). The key offered below is based on those sources.

Key to *Trichopsomyia* species

1. Males (eyes meeting above the antennae) **2**
— females (eyes separate throughout) **4**

2. Antennal segment 3 at least 2x as long as its maximum depth; maximum width of the face (in anterior view) no greater than the maximum width of an eye **3**
— antennal segment 3 no more than 1.5x as long as its maximum depth; maximum width of the face c.1.5x the maximum width of an eye ..... ***joratensis*** Goeldlin (male)

3. Posterior cell of wing (cell r5 of Ball et al, 2002) ending apically almost in a right angle; antennal segment 3 approximately 3x as long as its maximum depth ..... ***flavitarsis*** (Mg.) (male)
— posterior cell ending apically in a distinctly acute angle; ant.seg. 3 no more than 2x as long as its maximum depth ..... ***lucida*** (Mg.) (male)

4. At the level of the antennal insertions the face (in anterior view) is no wider than an eye at the same level; hairs on hind tibiae including some longer than the width of the tibia **5**

— at the level of the antennal insertions the face is approximately 1.5x as wide as an eye at the same level; hairs on hind tibiae shorter than the width of the tibia (frons without dust spots; hind tibiae almost entirely black-haired; posterior cell ending apically almost in a right angle) ..... ***joratensis*** (female)

5. Hind tibiae black-haired; posterior cell ending apically almost in a right angle; frons without dust spots ..... ***flavitarsis*** (female)

— hind tibiae silver-white haired; posterior cell ending apically in a distinctly acute angle; frons with a pair of distinct, silvery-grey dust spots ..... ***lucida*** (female)

Trichopsomyia lucida (Meigen), 1822

This species is known in Europe from the Netherlands and Germany southwards to the coast of the Mediterranean and through central and southern Europe to Turkey. Its occurrence in Britain is thus not surprising, perhaps, even if it does not appear among species predicted to occur (Speight, 2000). However, records from Belgium (Verlinden and Decleer, 1987) and the Netherlands (NJN, 1998) are scattered and few, except for a cluster in Limburg. Its habitat might best be described as tall herb communities along thermophilous forest fringes, and tall-herb open areas within deciduous forest, on well-drained soils. The 32 hectares of Abney Park Cemetery has a network of wide footpaths within woodland. The *T. lucida* specimen was collected flying among nettles (*Urtica*) at the side of a foot-path that is kept clear by periodic cutting of marginal vegetation, fronting mature ash (*Fraxinus*) woodland also containing a scattering of various exotic trees and with an understorey of shrubs like bramble (*Rubus fruticosus*) and elderbery (*Sambucus nigra*). The plant-list for the path-edge flora includes a variety of tall herbs, like *Arctium, Centaurea, Cirsium, Epilobium, Solanum* and various umbellifers (K. Byers, pers. comm.). The site is well-drained and there is no permanent, standing or running water. *T. lucida* is quite small for Pipizini, with small specimens no larger than the smallest *Heringia* (*Neocnemodon*), and it skulks among tall herb vegetation that is in the sun, flying between the stems with a rapid, zig-zag motion – an activity that seemingly ceases before mid-day. If the situation in Britain is as elsewhere, two generations per annum would be expected, the one on the wing May/June, the second in July/August. The male is narrow-bodied and drab, with a charcoal-grey, matt, unmarked abdomen. By contrast, the female normally has a pair of rather angular, brightly-orange marks on the second tergite, which is highly polished and undusted. These markings (their general appearance can be seen in the figure provided by Verlinden, 1991, and repeated in van Veen, 2004) are sufficiently distinctive to allow recognition of the species in the field. Flower-visiting data are limited, but it has been found at flowers of *Rubus fruticosus* agg and *Verbascum*. The developmental stages remain unknown.

Unlike *T. lucida*, *T. joratensis* is a species of humid forest, occurring among tall-herb vegetation of flushes, or along streams and small rivers, or humid track-sides, in humid beech (*Fagus*) forest. It is known from Fenno-scandia southwards into central Europe, where it is not infrequent in the beech forests of the Alps. A comprehensive account is provided for this species by Speight (2006).

Acknowledgements

I am grateful to Karen Byers and Anna Smale of the Abney Park Trust Information Service for the loan of a hand net, without which the specimen on which this text is based could not have been caught and for information about the Abney Park Nature Reserve.

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A SUPPLEMENT TO "TYPES OF BALKAN BUTTERFLIES IN THE COLLECTION OF NATURAL HISTORY MUSEUM, LONDON" (LEPIDOPTERA: PAPILIONOIDEA)

STANISLAV P. ABADJIEV

81 Lyuben Karavelov Street, Sofia 1000, Bulgaria.
(E-mail: stas@abadjiev.net)

Abstract

Some type specimens of Balkan butterflies that are housed at the British Museum (Natural History) in London are listed.

Catalogue

This is an addition to my paper on the types of Balkan butterflies in Natural History Museum, London (Abadjiev, 2002). Each line in the text of the labels is separated by a vertical line "|". In quotations of combined labels (handwritten on printed forms) the handwritten text is reproduced in *italics;* completely handwritten and completely printed labels are quoted in a plain character face.

Erebia calcarius Lorkovic, 1953

calcarius Lorkovic, 1953

"[*Erebia tyndarus*] *calcarius* nova ssp." Lorkovic, 1953 (Specificka, semispecificka i rasna diferencijacija kod leptira *Erebia tyndarus* Esp. I. Novi alopatrijski oblici vrste *E. tyndarus* Esp. i analiza njihovih srodstvenih i sistematskih odnosa. *Rad Jugoslavenske akademije znanosti i umjetnosti* **5:** 279). Type locality: [Slovenia]: "Mojstrovka, 1600 m" (Lorkovic, 1953: 279).

Paratypes male, female with labels: [male] (1) printed (on white paper) "Julijske Alpe | Mojstrovka | Grebenec, 1600 m | 25. 7. 1950. | Z. Lorkovic leg."; (2) handwritten (on white paper) "E. tyndarus | ssp. calcarius | Lorkovic [male] | Topotypus | Paratypus"; (3) printed (on white paper) "BMNH(E) # 662232"; [female] (1) printed (on white paper) "Julijske Alpe | Mojstrovka | Grebenec, 1750 m | 26. 7. 1950. | Z. Lorkovic leg."; (2) handwritten (on white paper) "calcarius Lrk. [female] | Paratypus | Topotypus"; (3) printed (on white paper) "BMNH(E) # 662233". Both paratypes with (1) circle printed (on white paper with yellow frame) "Para- | type"; (2) printed with handwritten inscriptions (on white paper) "Brit.Mus. | 1954-*171*".

The number of the type specimens originally not stated. Treated as a different species.

illyrica Lorkovic, 1953

"[*Erebia tyndarus*] *illyrica* n. ssp." Lorkovic, 1953 (Specificka, semispecificka i rasna diferencijacija kod leptira *Erebia tyndarus* Esp. I. Novi alopatrijski oblici vrste *E. tyndarus* Esp. i analiza njihovih srodstvenih i sistematskih odnosa. *Rad*

Jugoslavenske akademije znanosti i umjetnosti **5:** 284). Type locality: [Yugoslavia: Montenegro]: "Durmitor, 2100-2200 m" (Lorkovic, 1953: 284).

Paratypes 5 males, 3 females with labels: [1 male] (1) circle printed (on white paper with yellow frame) "Para- | type"; (2) handwritten (on white paper) "E. (tyndarus) | cassioides | ssp. illyrica Lrk. | Paratypus | Topotypus"; (3) printed (on white paper) "BMNH(E) # 662138"; [2 male] printed (on white paper) "BMNH(E) # 662176"; [3 male] printed (on white paper) "BMNH(E) # 662177"; [4 male] printed (on white paper) "BMNH(E) # 662178"; [5 male] printed (on white paper) "BMNH(E) # 662179"; [6 female] (1) handwritten (on white paper) "illyrica Lrk. [female] | Paratypus | Topotypus"; (2) printed (on white paper) "BMNH(E) # 662139"; [7 female] (1) printed with handwritten inscriptions (on white paper) "Montenegro sept. | Durmitor | 1700-1800 m | 25. 8. 1949. | Z. Lorkovic leg."; (2) printed (on white paper) "BMNH(E) # 6621780"; [8 female] (1) printed (on white paper) "Montenegro sept. | Durmitor | Terzin Bogaz | 2200 m | 30. 8. 1949. | Z. Lorkovic leg."; (2) printed (on white paper) "BMNH(E) # 662181". Paratypes 1 and 6 with (1) printed (on white paper) "Montenegro sept. | Durmitor, Meded | 1900-2100 m | 28. 8. 1949. | Z. Lorkovic leg."; (2) printed with handwritten inscriptions (on white paper) "Brit.Mus. | 1954-*171*"; 2-5, 7 and 8 with printed with handwritten inscriptions (on white paper) "E. *cassioides ssp.* | *illyrica Lork.* | det. Z. Lorkovic. | B.M. 1955-462."; 2-5 with printed (on white paper) "Montenegro sept. | Durmitor | Lokvice 1900 m | 25. 8. 1949. | Z. Lorkovic leg.".

The number of the type specimens originally not stated. Treated as a subspecies of *Erebia cassioides* (Reiner & Hohenwarth, 1792).

***illyromacedonica* Lorkovic, 1953**

"[*Erebia tyndarus*] *illyromacedonica* n. n." Lorkovic, 1953 (Specificka, semispecificka i rasna diferencijacija kod leptira *Erebia tyndarus* Esp. I. Novi alopatrijski oblici vrste *E. tyndarus* Esp. i analiza njihovih srodstvenih i sistematskih odnosa. *Rad Jugoslavenske akademije znanosti i umjetnosti* **5:** 287-288). Type locality: [Macedonia]: "Sarplanina, Popova Sapka 1800 m" (Lorkovic, 1953: 288).

Paratypes 4 males, 3 females with labels: [1 male] printed (on white paper) "BMNH(E) # 662182"; [2 male] printed (on white paper) "BMNH(E) # 662183"; [3 male] printed (on white paper) "BMNH(E) # 662184"; [4 male] printed (on white paper) "BMNH(E) # 662185"; [5 female] printed (on white paper) "BMNH(E) # 662186"; [6 female] printed (on white paper) "BMNH(E) # 662187"; [7 female] printed (on white paper) "BMNH(E) # 662188"; Paratypes 1-4 with handwritten (on white paper) "Sharplanina | Popova Shapka | 25.7.-10.8.952."; 5-7 with handwritten (on white paper) "Sarplanina | Popova Sapka | 25.7.-10.8.952 | Z. Lorkovic leg."; all with printed with handwritten inscriptions (on white paper) "E. *cassioides ssp.* | *illyromacedonica Lork.* | det. Z. Lorkovic. | B.M. 1955-462.".

The number of the type specimens originally not stated. Treated as a subspecies of *Erebia cassioides* (Reiner & Hohenwarth, 1792).

***Apatura metis* Freyer, 1929**

balcanica Nguyen Thi Hong, 1976

"*A.*[*patura*] *m.*[*etis*] *balcanica* subsp. nov." Nguyen Thi Hong, 1976 *(Les Apatura: Polymorphisme et Speciation (Lepidopteres Nymphalidae):* 39; Pl. 6: Fig. 1; Pl. 10: Figs 1, 2). Type locality: [Serbia:] "Kragouyevatz" (Nguyen Thi Hong, 1976: 39).

Holotype male with labels: (1) printed (on white paper) "Kragouyevatz | Servia | W. Taborski"; (2) printed (on white paper) "B.M.1951-635"; (3) printed (on white paper) "BMNH(E) #720374"; Paratypes male, female with labels: [male] (1) printed (on white paper) "Greece | Merlin Coll. | 96-275."; (2) handwritten (on white paper) "Acarnan. | 11 63."; (3) printed (on white paper) "BMNH(E) #720372" [Illustrated on Fig. 1]; [female] (1) printed (on white paper) "Kragouyevatz | Servia | W. Taborski"; (2) printed (on white paper) "B.M.1951-635"; (3) printed (on white paper) "BMNH(E) #720373" [Illustrated on Fig. 2].

The paratypes have been illustrated on plate 10: figs 1, 2. The originally stated locality of the specimen illustrated on fig. 2 (the female), Greece, is erroneous (cf. labels above). Actually all the specimens represent *Apatura ilia* ([Denis & Schiffermüller], 1775).

Acknowledgments

I would like to thank Mr Phil Ackery, Mrs Kim Goodger, and Mr Jim Reynolds, Department of Entomology, Natural History Museum, London, for their invaluable help.

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Black Hairstreak *Satyrium pruni,* L., (Lep.: Lycaenidae) courtship behaviour

On 15 June 2006, eight members of the Cambridgeshire & Essex branch of Butterfly Conservation visited Glapthorn Cow Pastures Wildlife Trust Reserve, Northamptonshire, to learn about monitoring and conservation of the Black Hairstreak butterfly at one of its best sites in the UK. We were given a guided walk and commentary by the warden, Dick Smith, previous warden, Geoff Gent, plus local experts Mick Groom and Ioan Thomas. We observed over forty of the butterflies between 09.30 and 15.00 at locations throughout the wood, with much

territorial activity in evidence. At about 11.45, Mick Groom and Vince Lea observed a Black Hairstreak settle on a Blackthorn *Prunus spinosa* bush at around 3m above ground level, on the sunny side of a ride. A second Black Hairstreak flew past, but instead of being evicted in the typical high speed vertical chase that normally seems to follow such a meeting, the pair flew much closer together in a short upward spiral. They ascended for only 50 cms or so before landing together on the same bush. They repeated this brief dance and settled again on the outside of the bush. Shortly after this, they flew close together deep into the middle of the bush, but fortunately still in view from one angle – the bush was relatively open-centred, and a spot of sunlight penetrated to their perching position. We initially followed them to this spot using binoculars, and the sun-spot helped us to get a visual fix on the location. It was then possible to train a tripod-mounted telescope onto the spot, such that all members of the party could observe the pair.

The pair stood side-by-side on a leaf to start with, then one butterfly turned round, and they joined together in the typical lepidopteran mating position of back-to-back. They moved slightly during the 25 minute copulation, changing angle from about 180 degrees apart to perhaps 140 degrees, but otherwise they remained in the same position. After separation, one of the butterflies flew off immediately and was lost from sight. The second butterfly turned around on the spot, walked onto a different leaf, cleaned its antennae for a short while, then flew off after about 5 minutes.

The scarcity, habits and habitat, mean that observing courtship of this species is always going to be difficult. The brevity of the courtship and the inaccessible location chosen for the prolonged mating would, if typical, further explain why this behaviour has not, as far as I know, been reported in the literature before. Black Hairstreak have a notoriously short emergence period as adults, and this mating occurred four or five days after the first individuals were seen at this site, suggesting that females may be mated soon after emergence, after which they presumably spend time egg-laying or feeding.

My thanks must go to Dr Robin Field, Cambs & Essex Butterfly Conservation, and to the dedicated members of the Glapthorn Cow Pastures reserve, who gave us an excellent insight to their work.— VINCE LEA, 236 Wimpole Road, Barton, Cambridge, Cambridgeshire CB3 7AE (Email: vincelea@btinternet.com).

Do all Glow-worms light up early ?

As a result of a recent observation in North Wales I found the observations of Tim Gardiner (2006. Effect of survey start time on counts of the Glow-worm, *Lampyris noctiluca* (Col., Lampyridae) *Ent. Rec.* **118:** 184 -185) rather intriguing. I wonder about the reliability of his assertion that glow-worms all light up prior to midnight. On the evening of 20/21 July 2006 a colleague and I ran two lights over sheets for recording moths at Fedw Fawr, Anglesey (O.S. grid reference SH 6081). The two lights were nearly 70 yards apart and effectively out of sight of each other. The track between the two lights was well-trodden so regular visits from one to the other

without a torch was fairly straight forward. It was a warm night and produced a list of some 90 species of Lepidoptera. Only two glow-worms were seen on the track between the lights and both revealed themselves just before we packed up for the night at about 01.30 hours. Both started glowing at approximately 01.15 hours and were still illuminated when we left at about 01.30 hours. Were these just very late starters or do Welsh ones behave differently? — K. P. BLAND, National Museums of Scotland, The Granton Centre, 242 West Granton Road, Edinburgh EH5 1JH.

News on the conservation of some moths listed in UK Biodiversity Action Plan and some other nationally scarce moths in 2005

This article follows in the foot-steps of similar annual reviews since 2000 in which the author has reported on some species and projects with which he is personally involved, in most cases to achieve the objectives and targets of the UK Biodiversity Action Plan (see *Ent. Rec* **113**: 121-129 (for 2000), **114**: 149-153 (for 2001) **115**: 213-219 (for 2002), **116**: 134-137 (for 2003) and **117**: 111-124 (for 2004)). For brevity only selected highlights and key results from 2005 are included. In every case the author is indebted to Writtle College for support in writing up these results in his post as Reader within the Centre for Environment and Rural Affairs at the College and in some cases for financial help in conducting aspects of the fieldwork. Other partners and colleagues are acknowledged within each section and I am most thankful to all of them. Private land-owners and some others are generally not named, for reasons of privacy and security, but their help is also greatly appreciated. Where indicated, the studies are part of Butterfly Conservation's Action for Threatened Moths Project, which is part funded by English Nature, and the author is indebted to nominated officers Mark Parsons (BC) and David Sheppard (EN) for helping to ensure continued funding. Other aspects of the Action for Threatened Moths Project are reported elsewhere, in particular in the Lepidoptera Conservation Bulletin, issued annually by BC, which continues the National Moth Conservation Project News Bulletin which the author started in 1987 and which ran to ten issues, the last in 1999.

Barberry Carpet *Pareulype berberata* (D. & S.). Baseline monitoring of the known wild populations and the recently established colonies of the Barberry Carpet moth *Pareulype berberata* was continued in 2005, as in all previous years since 1995. This was principally by the author as part of his continuing project supported by Writtle College, but with invaluable assistance from a number of volunteers, some associated with the work since it was part of the English Nature Species Recovery Programme (1995-1999) and also previously since the author started working on the species in 1987. Larval populations of the moth appear stable at most of the various sites in Wiltshire, with definite recovery this year from previous over-zealous hedge-trimming at two of these sites. Larvae were also found at the single known site in Gloucestershire which has been monitored almost annually since larvae were first discovered there in 1988 (see *Ent. Rec.*

103: 287-292). The moth is thriving at its establishment site in Northamptonshire and at its larger establishment site in Wiltshire. It survives at lower density at the establishment site in Lincolnshire (*British Wildlife* **17**: 129 & *Ent. Rec.* **116**: 262-263). The Suffolk establishment site and the native site in Dorset were not inspected for larvae in 2005 but will be in 2006, and the plantings of extra Barberry bushes at the latter are growing well. The most exciting news is that a population has been confirmed in Oxfordshire, with discovery of larvae in 2005, following the light-trapping of two adults there in 2004 (see *Ent. Rec.* **117**: 252). Additional sites have been identified for establishment trials in the coming years and further planting of Barberry for the moth has taken place at others, including London Zoo and Whipsnade Wildlife Park. The project involves the co-operation of a large number of land-owners and the support of the Zoo Federation and associates, who are doing commendable work maintaining a captive breeding stock of the Barberry Carpet for establishment of additional populations and in planting stands of Barberry at London Zoo and Whipsnade Wildlife Park.

Black-veined moth *Siona lineata* (Scop.). Monitoring of the Black-veined moth *Siona lineata* at its four known breeding sites in Britain, all in Kent, produced rather depressing results in 2004 (see *Ent. Rec.* **117**: 113-114), with none at all seen at the smallest of the sites and numbers at another in continuing decline. In 2005 neither the weekly monitoring visits during the flight period by Sean Clancy for Butterfly Conservation, nor my own visit on 9 June, produced any adults at the smallest site so it appears the moth has indeed been wiped out by inappropriate management, as discussed at length in my previous annual reports. The habitat damage and abrupt decline of the moth dates back to February 2001 when the owner of the site machine-cut the whole of the occupied field while the larval population was attempting to overwinter on the grass-stems. Black-veined moths were counted at the other three sites in 2005 and at each there are challenging habitat management issues.

The highlight of 2005 was the discovery that a substantial and widespread population of the Black-veined moth has become established on a fifth site (*BW* **17**: 53-54). The discovery was made while I was leading a combined field meeting for BC and the BENHS, with Dan Hoare and Greg Ellis on 8 & 9 June. This rough grassland site, which is in the same area as the other four sites, was inspected for five years with negative results prior to my release there in 2000 of six female and three male Black-veined moths, as part of an English Nature attempt to establish a population (*Ent. Rec.* **114**: 149-153). The moths were translocated from a native site the same day. The site had been restored to an appropriate condition by two years of carefully controlled grazing. In 2001 I saw two adult Black-veined moths on the site, at the release point used the previous year. This strongly suggested there had been successful breeding. No moths were seen there during the flight periods of 2002, 2003 or 2004 (Sean Clancy) but in 2005 we were amazed and delighted to count a total of six males and ten females distributed throughout the site on 9 June. This density currently exceeds or rivals

that on all four remaining native sites. Clearly such an adult population had not just arrived in 2005 and, for it to be so well distributed, it is unlikely to be the result of founding adults arriving in 2004. More likely the released population continued its establishment during 2002 and 2003, perhaps at low levels and in patches, undetected, from which it has now increased as grazing pressure has been relaxed further and weather and/or other factors have been favourable during vulnerable stages of the life-cycle. Irrespective of whether this is a natural or assisted colonisation, this population is most welcome and it confirms that suitable additional habitat can be provided for this endangered and protected species.

Other good news is that habitat restoration on a sixth former site for the moth is progressing and plans are underway to link it to one of the occupied sites by clearing a route through some intervening woodland, thanks to work by the Kent Wildlife Trust.

Four-spotted Moth *Tyta luctuosa* (D. & S.). During June 2005 a number of sites were searched successfully for the Four-spotted moth *Tyta luctuosa*, followed up by positive results for larvae during searches after dark in late June and July, confirming breeding. We now know that the moth is breeding in Leicestershire, at Ketton Quarry, where larvae and adults were seen simultaneously after dark on 27 June (Adrian Russell and group). An extensive population has been rediscovered along roadside verges and field margins in the vicinity of Littlebury and Great Chesterford, Essex, mainly on private land, with over one hundred individuals seen on one occasion (Phil Jenner, David Hopkins, Colin Plant, Chris Tyler-Smith and others) and larvae were found by night on 29 June (PW, Phil Jenner & Beatrix Spencer). The Essex population was known to Maitland Emmet who described it as fairly common there in 1977(in "The larger moths and butterflies of Essex, Emmet & Pyman, 1985). Weekly transect monitoring and other work on the species continued near Peterborough, where a large population is thriving under sympathetic management by the Environment Agency and Railtrack. Results from this transect monitoring were used to direct the timing of many other searches. After visiting this site for training by the author, Sharon Hearle, BC Regional Officer) and many volunteers succeeded in searching for and finding populations of the moth at Great Wilbraham near Cambridge, where John Dawson (County Moth Recorder for Cambridgeshire) had detected adults at light in previous years, and between Kirtling Green, Cambridgeshire and Great Bradley, just over the county border into Suffolk. The moth has been known from this area for many years, but the records and knowledge of the likely breeding areas needed up-dating. Both sites are very similar in many ways to the Peterborough site. Light-trapping by Martin Cade continued to record the moth at Portland, Dorset, and the moth is doing well on a conservation site in Lincolnshire and on an adjacent farm (PW). Not all the searches were successful. A long search of the Bingham site in Nottinghamshire by the author on 23 May failed to detect the species but an unconfirmed sighting from 6 or 7 June 2004

(Richard Penson *per* Sheila Wright) suggests the moth may still survive in a disused railway cutting at nearby Barnstone. As in previous years there were records of individual Four-spotted moths in Somerset but still no population has been found. One of the sites in Oxfordshire is becoming somewhat overgrown and is in need of some specific habitat management to assist the moth. These are just some of the news items from 2005. The author continued to co-ordinate and analyse work on the moth from Writtle College for the third year of a three year project on the species, part-funded by English Nature, with assistance from Peterborough City Council, Cambridgeshire County Council and the Environment Agency. In addition to the above, he particularly thanks Adrian Russell and the site owners for arranging access and co-ordinating the searches at Ketton Quarry, and the Audley End Estate for their co-operation in Essex, and all the other site owners.

Marsh Moth *Athetis pallustris* (Hb.). The Marsh Moth *Athetis pallustris* provided a classic example of the need to be persistent when attempting to find some of our rarest British moths. Rick Pilcher found the species relatively easy to capture in portable light-traps at Gibraltar Point, Lincolnshire, in the 1970s (*Ent. Rec.* **85**: 230-233) but this is no longer the case. Since 2000 various people have made attempts to find the moth there. This has included deploying large numbers of light-traps over the site (e.g. *BJENH* **16**: 55-57), which was repeated again by Adrian Russell and others on 27 May 2005. All these attempts have produced negative results, but only a few days after the latest effort, a single male was recorded just 300m from one of the trap sites, by Paul Troake, at light on 5 June, the first record from this site since 17 May 1997, almost a decade ago (*per* Kevin Wilson, Site Manager). This means that there are still two sites where the Marsh Moth is known to survive in the British Isles.

As in 2004, the author organised and led a special light-trapping event jointly for the BENHS and Butterfly Conservation (BC) at the other British site, at the Saltfleetby-Theddlethorpe Dunes NNR, also on the Lincolnshire coast, as part of the BC 'Action for Threatened Moths' project (see *BJENH* **18**: 131-136). This year's meeting, on 26 May 2005, demonstrated that the Marsh Moth is more widely distributed and occurs at higher adult population density in the centre of the reserve than at the north end where almost all previous light-trapping has taken place over the years. Seven of us operated a total of eleven light traps, four in the traditional northern area, catching only two Marsh Moth (average 0.5 per trap), four in the central area catching six Marsh Moth (average 1.5 per trap), with blank results in two traps in a field in the extreme north which is being restored and in one trap to the west of the traditional site. All results since 2000 indicate that the moth is only really surviving on the traditional site in a small part near bushes. This is in contrast to the situation in the late 1980s and in 1990 when both adults and larvae were more widely spread and more frequent in the traditional field than now (the author, pers. obs.). The most obvious difference between the central and traditional northern areas is that the former is not subject to annual

hay cutting. It is lightly grazed by 18-20 cattle each year from mid October to mid-December and has been since 1977 (John Walker, site manager, pers. comm.). Hay-cutting has become annual in the traditional field in recent years, usually followed by grazing of the aftermath by sheep at the end of the year up until nearly Christmas (John Walker and Graham Weaver pers. comm.). Differences between the areas are apparent in the height of the sward, as measured by the Boorman drop-disc method (for method see *BC News* **50**: 51-53). In the traditional field the mean sward heights around the northern and southern sides of the clump of bushes on 26 May 2005 were 9cm and 7.5cm, with ranges of 7-13 cm and 6-12 cm respectively, reflecting the effects of the cutting and grazing. In the central area the mean heights at the south end were 13cm and 11cm, with ranges from 4-20 and 7-15cm respectively. The results from the light-trapping events in 2004 and 2005 are consistent with the view that hay-cutting, or aftermath grazing, or both, may have resulted in a decline of the Marsh Moth on the site and that it is now only surviving in parts of the site which are long-term uncut or ungrazed, or around the bushes where cutting and grazing do not penetrate. Hopefully, the Marsh Moth will colonise the restoration field, where the mean sward height was measured at 16cm, with a range from 8-30cm and where Ribwort Plantain *Plantago lanceolata* is in ample supply as a larval foodplant, but the suitability of this sward and the colonising ability of the Marsh Moth are not yet known.

On 25 September 2005 the author found forty Marsh Moth larvae by sifting 24 litter piles kindly prepared for him by the EN reserve staff to sample the central area. This gives an average of almost two larvae per pile, which is a similar number to that found in the traditional area in the late 1980s and early 1990s. However none was found on 25 September 2005 in 22 similar piles constructed and sampled in the traditional area. This break-through result, the first time litter-piles have been used in the central area, backs up even more clearly and strongly the patterns from the light-trap catches. This example adds to existing concerns that annual hay-cutting over the entire area occupied by localised invertebrate populations can have catastrophic affects, which are probably intensified by aftermath grazing. The management of key parts of the Saltfleetby reserve is under review as a result of these findings, with further monitoring experiments planned.

The author particularly thanks John Walker, EN Assistant Site Manager, for his continuing interest and help in the monitoring and management at Saltfleetby and all those who supported and helped with the light-trapping event.

Scarce Hook-tip *Sabra harpagula* (Esper). On 28 June some of the hardiest and bravest members of the BENHS, led by the author, gathered in the ancient limewoods of the Wye Valley on the borders of Monmouthshire and Gloucestershire. The main aim was to try and capture a fertile female Scarce Hooktip moth *Sabra harpagula* to obtain eggs for study of the larval habits on food-plants in captivity, with a view to finding and surveying the larvae more

successfully in the wild, from which there are very few records (see *Atropos* **23**: 36-44 & **25**: 68). Despite heavy rain at the start of the night a dozen light-traps were operated all night under some massive Small-leaved Limes *Tilia cordata* - reported to be the sole larval foodplant of the Scarce Hook-tip in the British Isles. A female was captured in perfect condition, together with a number of males, and she laid 224 eggs. Larvae were reared and various interesting observations made. For example, the final instar larvae readily accepted the foliage of the Large-leaved Lime *Tilia platyphyllos* and also English Elm *Ulmus procera,* in addition to the Small-leaved Lime with which they are normally associated (*British Wildlife* **17**: 54). Larvae reared indoors were pupating by 10 August in spinnings made by folding the edge of a lime leaf downwards but larvae reared outdoors were only partly grown by the start of September (Tony Rouse).

Armed with this experience, the author returned to the Wye Valley woodlands on 1 & 2 September where he was joined by Martin Anthoney, Ian Smith and staff from the local Forestry Commission (FC) office, equipped with a pole saw in addition to conventional beating trays. Despite spending most of a day searching in four sites (including St Pierre's Great Wood as well as sites along the River Wye) by eye and beating low regrowth, trunk shoots and canopy foliage obtained using the pole saw, long-handled loppers and a ladder, no larvae, nor obvious signs of feeding nor spinnings of this species were found. This suggests the larvae are probably at low density and feeding mainly high in the canopy. We are most grateful for the help and co-operation of the FC staff on both sides of the Welsh border in this project, and to Writtle College and the BENHS for financial support.

Silurian *Eriopygodes imbecilla* (Fabr.). On 13 April 2005 larvae of the Silurian moth *Eriopygodes imbecilla* were found in the wild in the British Isles for the first time, as the result of searches funded by the Blaenau Gwent Biodiversity Project, with co-ordination and assistance from Butterfly Conservation (*Atropos* **27**: 20-23 & plates). The first search on 13 April was conducted by a group of us, gathered by Martin Anthoney, Monmouthshire County Moth Recorder, around dusk and after dark in and above the gully, where the species was first discovered in Britain, by Neil Horton on 30 July 1972 (see *Ent. Gaz.* **24**: 219-222 & *Ent. Rec.* **88**: 246-248). We found no larvae in the gully but eight on the upper slopes and tops which are covered in Bilberry-dominated moorland. The larvae were found in two 15 minutes searches and a 15 minute descent, between 21.00 and 23.00hrs. Some of the larvae were seen climbing the Bilberry stems and feeding mainly on Bilberry stems and buds - only a few of the plants were showing any leaf and many had been cropped by sheep. Feeding on Heath Bedstraw *Galium saxatile* was also observed and one larva was filmed doing so. Some of the larvae were crawling across moss and most were in a slight depression area where mosses and grasses were growing in hummocks amongst the Bilberry. On 14 April the author, accompanied by Anthony Price, found two Silurian larvae in an identical situation at high altitude about 4km north of the original gully, but none

on the lower parts of similar moorland. Eight larvae were retained by the author for study, to determine when and how they pupated and whether they were carrying any parasitoids. The larvae were kept in a cool garage in mock-up habitat composed of plants and materials gathered on site. They were still feeding on inspections on 25 & 30 April, but had all pupated by 5 May. The pupae were formed in fairly tight cocoons amongst the surface of moss, which was incorporated into the cocoon. No parasitoids emerged. On 26 April Martin Anthoney was joined by Russell Hobson and Mark Parsons of butterfly Conservation for a follow-up visit to the original site. They too succeeded in finding larvae of the Silurian – six near the top of the hill in the slight depression in 50 man-minutes of search from 21.00hrs, three on Bilberry and three on moss. They did not find any in a search of similar duration nearer to the summit where the Bilberry looked slightly taller and browner and there was more heather.

Less successful was a search for pre-hibernation larvae made on 1 September by five of us, including Martin Anthoney and Blaenau Gwent Biodiversity Project Officer Deborah Beeson. We enjoyed late afternoon sunshine and a warm evening while we searched by eye and swept the swards of predominantly Bilberry *Vaccinium myrtillus* for young larvae by daylight and after dark. Young larvae of other noctuid moths were found, but we saw none of the Silurian, even when searching the creeping growth of Heath Bedstraw by torch-light well after dusk. We noted that the Bedstraw had grown and spread greatly since the spring and that there were many new, often reddish shoots on the Bilberry. The Silurian had been found feeding on both these plants in April. Details of the larval stage prior to the winter therefore remain a mystery for another year. For the next search, a date in late September or October and use of a suction sampler to improve the detection of larvae at ground level are recommended. David Wedd (pers. comm.) finds that in captivity the small black early instar larvae will eat wilted and partially rotting leaves, so it may be that they live entirely in plant debris on the ground at this stage.

White-spotted Pinion *Cosmia diffinis* (L.). The major new discoveries from work on the elm-dependent White-spotted Pinion *Cosmia diffinis* in 2005 were the finding of a part-grown larva near Ely, Cambridgeshire, by David Hopkins and the author on 24 May, and the capture of three adults in a small copse of elms by the village of Potton, near Sandy, Bedfordshire by John Day and the author on the evening of 4 August 2005 (*antea*: 137-139). The first event confirms that the species is breeding another area to the north and east of the known populations around Huntingdon and Dry Drayton and the second confirms that at least one population the moth survives in Bedfordshire. The latter is the first population to be found in the county since the last individuals of a colony were seen at Coppice Wood, Riseley, in 1985 (Arnold *et al.*, 1997. *The butterflies and moths of Bedfordshire*, and Les Hill, Bedfordshire County Macro-moth Recorder, pers. comm.). The Potton population was located by following up records of two singletons recorded by John Day in his garden light-trap there on 2 August 2002

& 11 August 2003 which are the only others of the species seen in the county since 1985. An elm copse is just visible from John's house and almost as soon as five wine-ropes and two light-traps were set up, one moth came to a wine-rope (at 21.35hrs) and two to light from deeper in the copse. However, an extensive search for larvae there on 27 May 2005, by the author, John Day and Andrew Frost, had drawn a blank result. Coppice Wood had earlier been searched with light-traps all night on 12 August 2004 without success (see *BJENH* **18**: 153-156). Efforts to find the moth in other copses near Potton are proposed for 2006. An elm copse at Brightlingsea, on the Essex coast, was searched for larvae on 24 May 2005 by the author, Joe Firmin and others, with negative results for the second year running, following the capture of adult White-spotted Pinions at a light-trap there on 6 August 2003 (two) and subsequently. Larvae are almost certainly present however, because adults are now trapped there annually (David Scott, pers. comm.). A large elm was searched unsuccessfully for larvae in Folkesworth, Cambridgeshire, on 27 May by Andrew Frost and the author, following the capture there of a single adult to light. If the moth is not breeding on this tree, it must have flown from some distance because there are no other large elms for several hundred metres.

Meanwhile, the known populations of the White-spotted Pinion in its national stronghold around Huntingdonshire were monitored by light-trapping by Barry Dickerson in 2005, as in previous years, and by Ruth Edwards at a site in Cambridgeshire. Although the moth was seen in reasonable numbers when the weather and the health of the recorders allowed, Dutch elm disease has recently killed the majority of trees at the Cambridgeshire site and is affecting trees in various of the Huntingdonshire sites.

Huntingdonshire, Cambridgeshire, Essex and Bedfordshire are the only counties to have produced records of the White-spotted Pinion in the last ten years, despite a number of searches in elm woodland in adjacent Northamptonshire and elsewhere, including a nationwide search on National Moth Night in 2001 (see *Atropos* **16**: 34-37). But there are many elm sites awaiting investigation. Those around Milton Keynes look particularly promising and it is hoped some may be targeted in 2006.

Buttoned Snout *Hypena rostralis* (L.) and **Square-spotted Clay** *Xestia rhomboidea* (Esper). Readers who have been following the work by the author, Robin Field and others on these two species in Cambridgeshire and Essex over the last three years may be aware that the fieldwork was concluded early in 2005. Papers presenting the overall results of these two projects are now in print (see *antea*: 57-65 for Square-spotted Clay and *Ent. Rec.* **117**: 253-262 for Buttoned Snout).

— Paul Waring, Reader, Centre for Environment & Rural Affairs, Writtle College, Essex. Contact address: Windmill View, 1366 Lincoln Road, Werrington, Peterborough PE4 6 LS (E-mail: paul_waring@btinternet.com).

Hazards of butterfly collecting. Butterflies of Egypt, 1970-87

Most readers might think Egypt is not a promising place in which to study butterflies. In this they would be largely correct. Not finding anything significant is the main hazard of collecting in Egypt. However, I nonetheless decided to bring to a close my Middle East butterfly research with a book on the Egyptian fauna. So I devoted the spring of 1987 to field research, intending to cover pretty much the entire country. My main instrument was a tiny Peugeot car – the 205 model, I think. We were to part some 25,000 km later on the very best of terms.

I had visited Egypt a dozen times before, mainly on business. I even had my first honeymoon there. This was in early 1971 – not long after the 6-day war – when no-one visited Egypt. Being resident in Lebanon, we were braver. It was also very different from visiting Egypt today. When you went to the west bank of the Nile in Luxor, you would solemnly shake hands with any other foreign visitor. You would allow them to visit Tut-ank-Amun's tomb first – perish the thought of anyone being in the tomb together with you! Today more than a hundred tourist buses can be seen parked in the entry to the Valley of Kings. Access to the tombs is rationed because the moisture from visitors endangers the wonderful frescoes. We were just four on our tour – two bright young British female teachers from Beirut and the honeymooning couple. We had our own *dragoman* (tour-guide), a distinguished elderly gentleman with the fine name of *Ramadan*, with a good – if somewhat superficial – knowledge of the local sites. He used to end the day by saying: "You have been very good today ... I look forward to working with you tomorrow". Anyhow, we had a great time staying at the classic hotel - the hotel garden having a good representation of Egyptian butterflies scattered round a nice swimming pool. However, local arrangements and travel back to Cairo were uncertain. Questions were invariably met with "Trust in Allah and Mr. Ramadan".

On subsequent visits to Egypt, curious things would happen in the entomological area. On one visit the common eggfly (*Hypolimnas misippus*) – which I had never seen in Egypt before – would be common even in the main Tahrir Square and the garden of the National Museum. On the next visit it would be absent, but the African emigrant (*Catopsilia florella*) would be everywhere.

However, the 1987 visit was a scientific one sponsored by the Carlsberg Foundation, so I needed to go into a focused mode. After some days in the Nile Delta, which turned up nothing significant (actually, I think I was the first to find the larvae of *Vanessa atalanta* in Egypt – the species certainly breeds during its winter migration to Lebanon). So I headed for the Siwa Oasis on the Libyan border. Here the basically Indian/Oriental tiny blue butterfly *Zizina otis* had turned up on the Armstrong Expedition in the 1930s - a most anomalous biogeographical element, but I had seen the specimens before leaving London, and that is what they were. There had just been a spat between Egypt and Libya: the oasis is claimed by Libya, and Egypt has a major fighter base there. It took me two days in Mersa-Matrouh – and more than fifteen cups of Arabic coffee – to get permission to proceed. The oasis is quite unique – an amazing place to visit. Nonetheless, I wonder why Alexander the

Great spent a good chunk of time there in his quest to conquer the world. At leasttoday, Siwa is as far from the world as you get! I did not find *Zizina otis*, the presence of which in Egypt remains a biogeographical enigma. I suspect accidental introduction from India with some new crop to be tried out at Siwa.

Pausing for a drink between Mersa-Matrouh and the Siwa Oasis. The only place ever on a butterfly expedition where I did not see a single butterfly!

The next step was a long ride to have a look at the Sinai Peninsula. This had also been inaccessible till quite recently. It is now a major tourist destination. I found many interesting species in the small oases that dot the Sinai, but the crowning [in all senses of the word] glory of the Sinai is Mount Sinai ... from where Moses descended with the Ten Commandments. Here Ichiro Nakamura had found two amazing endemic butterflies (*Satyrium jebalia and Philotes sinaicus*) that I did not find. Twenty years later James, Gilbert, & Zahat also did not find them in Ichiro's original localities, but did find them elsewhere in the immediate area. Climbing Mt. Sinai is a great experience. When you reach the summit you have a view that covers a huge area. But the summit also teems with hill-topping butterflies, of which *Papilio saharae* was the most interesting.

The Sinai Coast was devoid of butterflies ... I had hoped to find some *Colotis* and some tropical Lycaenidae. But I now had to hurry. My wife had been in Mozambique and was planning to spend the next two weeks with me in Egypt. I went to Cairo International Airport at the appointed time. These were in the days before daily e-mail communication and when African airlines were no models of reliability. But there Nancy was, walking down the airstairs with a wave that she could not even have known I could see.

We had a splendid two weeks, going to Suez and up the Red Sea coast to Hurgadha, then inland to Luxor and Aswan. I tried to do as much entomology as I could, but – honestly – there was not that much entomology around, so it became more quality time than research. I did on one of our excursions find *Chilades eleusis*, a species described from southern Egypt – it was subsequently re-described as *Chilades nigeriae*, since Miss Sharpe could hardly have imagined that something described from Egypt was also in Nigeria. I then put Nancy on a flight out of Luxor and worked my way slowly back to Cairo.

All in all, I did not add much that was new to Egypt, but I did marshal all the data and placed them in Egyptian and biogeographical context. And a very nice little book emerged (Larsen, T. B., 1990. *Butterflies of Egypt*. Apollo Books). The total number of species is only about 60. Many are migratory. I can see as many species during a good day in an African forest, but that does not detract from the biogeographical interest of the limited Egyptian fauna. The amount of cultural remains in Egypt, from the pyramids down, beggars belief – also off the tourist trail. The pleasure of the six week study tour was so great that I almost felt embarrassed when submitting my travel claim to the Carlsberg Foundation.– TORBEN B. LARSEN, UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland.

A further note on the Sandhill Rustic *Luperina nickerlii* Freyer (Lepidoptera: Noctuidae) and its capacity to survive under sea water, with a note on the Flounced Rustic *Luperina testacea* (D. & S.) (Lepidoptera: Noctuidae) and other species

The three British subspecies of the Sand-hill Rustic moth *Luperina nickerlii* Freyer all occur in coastal habitat where they can be exposed to submersion by the sea. *Luperina nickerlii demuthi* Goater & Skinner, is abundant on salt marshes in south-east England, where its habitat is often under water at high tide (Goater & Skinner, 1995. *Ent. Rec.* **107**: 127-131). *Luperina nickerlii gueneei* Doubleday, occurs on sand dunes on the coasts of North Wales and north-east England where inundation by salt water is occasional. *Luperina nickerlii leechi* Goater, occurs on an isolated shingle beach in Cornwall, where waves occasionally wash over the habitat in severe storm conditions.

It occurred to me these subspecies may be able to survive under water. In 2004, I tested the tolerance of *demuthi* to salt water immersion by placing four adult males on a tray of the larval foodplant, *Puccinellia maritima*, inside an aquarium and poured sea water slowly into the tank to replicate the rising tide, gradually submerging the *Puccinellia* and the moths, but leaving the highest stems out of the water. To my surprise, as the water rose one moth climbed up a tall *Puccinellia* stem and then crawled back down again a few centimetres under the water where it remained for the next 30 minutes. The moth appeared to be unharmed by the experience, although of course the submergence may have reduced its life expectancy (Spalding, 2006. *Ent. Rec.* **117**:269-271). I decided to repeat this experiment with both *gueneei* and *leechi*.

I placed 3 *gueneei* into the same tank, this time on the larval foodplant *Elytrigia juncea* growing in tubs, and then repeated the experiment with 4 *leechi*. In contrast to my experiment with *demuthi*, all these moths were female and as a result probably less flighty. The water temperature was 19°C. At all times *Elytrigia* stems were available above the water level so that the moths could stay above the water. As the level of the sea water rose in the tank, I made the following observations:

1. Luperina nickerlii gueneei

Moth 1 – became active as the water rose and then swam vigorously in a straight line on the surface of the water across the tank by rapid movement of its legs (**see photo**). (The reader might like to see a video of this on the web site www.sandhillrustic.com).

Moth 2 – when the water reached this moth, it crawled down the stem where it stayed for about 1 minute, then crawled above the water, then down again where it walked round the edge of the flower tub for 3 minutes (**see photo**) before floating to the surface again. It then swam vigorously round in circles.

Moth 3 – dropped into the water, swam around and then climbed up a separate *Elytrigia* stem.

2. *Luperina nickerlii leechi*

Moth 1 – immediately moved under water then floated to the surface again. It swam on the water surface and then climbed down a stem where it remained head down under water for 7 minutes; after this time it moved further down where it stayed under a grass blade until I drained the tank 1 hour later.

Moth 2 - moved under water then up again before moving partly under for 2 minutes, then becoming fully submersed for 13 minutes. It then floated to the surface, climbed back down the stem, floated up again when it tried walking on the sand, then moved down again before floating to the surface and started swimming. Then it moved down again into the water where it stayed for 38 minutes until I drained the tank.

Moth 3 – moved down the grass stem (**see photo**) and stayed head down under water.

Moth 4 – floated on the surface of the water for 1 hour.

None of the moths appeared to be harmed by the experience. The Irish subspecies *Luperina nickerlii knilli* Boursin occurs on sandy cliffs; if these cliffs are inundated as a result of climate change then we are all in trouble!

3. *Luperina testacea* (D. & S.)

I repeated the experiment with the Flounced Rustic, the only other *Luperina* species resident in Britain. This time, the moths were very flighty and moved off as soon as the water reached them. They are able to swim rapidly, rather like *nickerlii* though perhaps not as quickly.

Moth 1 - moved down a stem and stayed 4 cms below the water level (see photo)

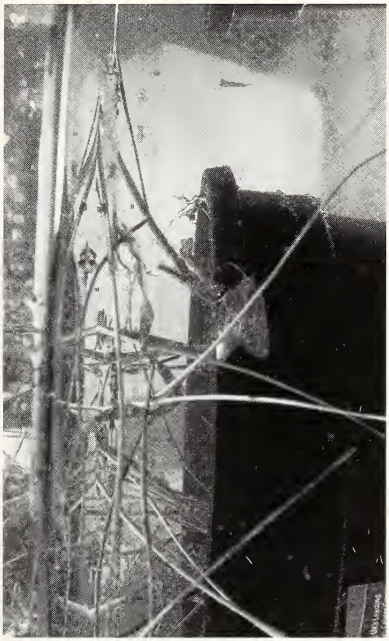
Moth 2 – remained in position as the water rose above it

Moths 3 & 4 – flew off as the water rose

4. Other species

I repeated the same experiment with five other moth species (taken at random from my moth trap), using a single specimen of each.

Diachrysia chrysitis L. Burnished Brass – flew off as the water rose.



Luperina nickerlii gueneei under water.

Luperina nickerlii gueneei 'swimming'.

Luperina nickerlii gueneei going under water.

Luperina testacea under water.

Ptilodon capucina Fabricius Coxcomb Prominent - flew off as the water rose; I later found this moth floating dead on the water's surface.

Acronicta rumicis L. Knot Grass – stayed stationary as the water level rose and only moved when partially submerged then swam across the surface of the water but not as rapidly nor as "purposefully" as *nickerlii*. Later found dying half-submerged.

Xestia c-nigrum L. Setaceous Hebrew Character – flew off as the water rose; later found floating on the water's surface.

Abrostola tripartita Hufnagel The Spectacle – flew off as the water rose.

Luperina nickerlii is able to swim rapidly in a straight line on the surface of the water and readily crawls below the water surface; submersion for up to one hour appeared to cause no harm to any individual. In some cases a film of air forms on the surface of the abdomen. It may be thought that this ability to move on and under water is an adaptation to occasional submergence by high tides, but the same ability to cope with water appears to be found in *Luperina testacea*, which is typically a species of grassy areas (often on the coast, but also inland), although this species is more flighty and apparently less proficient at swimming. None of the other species in this small sample moved below the surface of the water; although the Knot Grass swam across the water, the movement was hesitant and clumsy and gave no indication that the moth was accustomed to water; three of the species (Coxcomb Prominent, Knot Grass and Setaceous Hebrew Character) appeared to be harmed by water.— Adrian Spalding, Tremayne Farm Cottage, Praze-an-Beeble, Camborne, Cornwall. TR14 9PH.

Simulium (_Nevermannia_) _cryophilum_ (Rubtsov) (Dip.: Simuliidae) discovered at high tide mark in Fife

Prospecting for blackflies (Diptera: Simuliidae) in the Scottish Kingdom of Fife during May 2006, small burns were examined for the presence of simuliid larvae and pupa. Ten kilometres south-east of St Andrews, Cambo Burn passes through the woodland of Cambo House and out into the sea (O. S. grid reference NO 608117). On 17.v.2006, nine *Simulium cryophilum* larvae along with two pupal cases of the *Simulium ornatum* group were collected from vegetation lying in the stream; accessed near the shore but still under the canopy of the trees. After the vegetation had been cleared of simuliids, I followed the burn out onto the beach. Wondering whether larvae would venture this far I spotted a dark speck atop a stone exposed above the water level. Closer examination revealed a pupa of *S. cryophilum* (**Fig. 1A**). The site was 92 metres from the initial collection point and in line with the high tide mark indicated by the driftwood and other flotsam and jetsam littering the shore (**Fig. 1B**). Examining other stones, a single larva of indeterminate species was found along with a *S. cryophilum* pupal case, the latter signifying successful emergence of an adult. Blackflies inhabit freshwater lotic environments and are not associated with brackish waters of marshes and coastal estuaries. Simuliids appear intolerant of

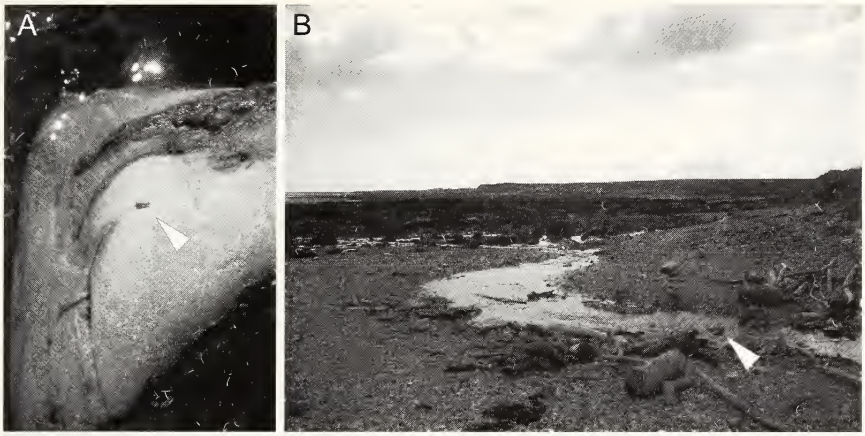


Figure 1. (A) *Simulium cryophilum* pupa on exposed stone indicated by white arrow. (B) Cambo Burn shore collection site of *S. cryophilum* indicated by white arrow.

saline habitats with the exception of *S. aureum* group species which are seen distributed in sea coast areas and have been found where the stream debouche onto the beach just above the high tide mark; a phenomenon now illustrated by *S. cryophilum*.— JOHN C. DAY, Centre for Ecology and Hydrology-Oxford, Mansfield Road, Oxford, OX1 3SR (E-mail: jcda@ceh.ac.uk).

Is *Spatalistis bifasciana* (Hb.) (Lep.: Tortricidae) associated with Sweet Chestnut *Castanea sativa*?

On 29 September 2005, MP and Tony Davis visited Beckley Woods in East Sussex in an attempt to locate larvae of the Olive Crescent *Trisateles emortualis*. Old withered and brown leaves of oak *Quercus* spp. and Sweet Chestnut *Castanea sativa* hanging from trees were particularly targeted for these searches. In one partly shady patch, several clumps of fairly tightly aggregated withered brown leaves of Sweet Chestnut were found on small branches that had fallen earlier in the year, these branches being caught in the branches of other trees just a few feet off the ground. The leaves were unravelled to find several larvae, with signs of feeding, i.e., frass. The larvae were clearly not Olive Crescent, but were retained in the hope of rearing them through. These were overwintered in a garden shed within a clear plastic container, its contents lightly sprayed with a mist of water from time to time.

It came as somewhat of a surprise that on the 30 April 2006 a *Spatalistis bifasciana* emerged, followed by two further examples, one on each of 1 and 2 May. Examination of the leaves found a pupa extruded from a cocoon within a tightly bound Sweet Chestnut leaf fragment. Reference to Emmet (1988. *A field guide to the smaller British Lepidoptera*. British Entomological and Natural History Society, London) gives the berries of Buckthorn *Rhamnus*, Alder Buckthorn *Frangula* or Dogwood *Swida* (=*Cornus*) as foodplants, Razowski (2001. *Die Tortriciden Mitteleuropas*. F. Slamka, Bratislava) adding Bilberry *Vaccinium myrtillus*, Bog Bilberry *V. uliginosum*, Privet *Ligustrum vulgare* and Cornelian-cherry *Cornus mas*.

It may be pertinent to add here that whilst undertaking a study of the moth fauna of various age classes of Sweet Chestnut coppice in Rewell Wood, West Sussex, in 2003, 21 *S. bifasciana* were recorded on 25 June 2003, with a maximum of nine in one MV trap (Clarke, 2004. *The Waved Carpet moth* Hydrelia sylvata *([Denis & Schiffermüller], 1775) coppice woodland survey 2003*. Butterfly Conservation, Wareham). This trap was placed in the oldest coppice block sampled (*c.* 20 years of age) and, perhaps, would be expected to be in an area with the greatest concentration of dead leaves hanging from trees.

In answer to the question posed in the title, it would seem that this is an unlikely yes! This species is not listed in Parsons & Greatorex-Davies (2006. The value of Sweet Chestnut *Castanea sativa* as a foodplant for Lepidoptera. *Entomologist's Record & Journal of Variation*, **118**: 1-11) and would appear to be yet another Nationally Scarce species (currently graded Notable) associated with this under-valued tree.— Mark Parsons, Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP.

Unusual flight time of the Sword-grass *Xylena exoleta* (L.) (Lep.: Noctuidae) in Perthshire

During the period of 27-31 December 2005, the Rothamsted Insect Survey light trap at Kinnaird (trap number 576, O. S. grid reference NO 241291) caught a single specimen of *Xylena exoleta*. This univoltine species generally flies during September and October (the last record from this trap was 27 September 2002) before hibernating through the winter and taking to the wing again in March and May. It is therefore very unusual, especially in the more northerly reaches of its distribution, to find a specimen flying in late December.

The Sword-grass has declined greatly in recent years and its range has contracted so that its strongholds are now in northern England and Wales, and throughout Scotland. Occasional records in the south of the country are probably immigrants. My thanks to Trefor Woodford for his continued hard work in running the trap so efficiently.— Philip J. L. Gould, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Late-flying Silver-ground Carpets *Xanthorhoe montanata* D.&S. (Lep.: Geometridae) in Scotland – evidence of a second generation?

Two specimens of *Xanthorhoe montanata* were caught in one of the two Rothamsted Insect Survey light traps at Beinn Eighe (trap number 350, O. S. grid reference NH 025629) – one during the weekend of 19-22 August 2005 and the other two weeks later between 2 and 5 September.

This species is generally considered univoltine, being on the wing from mid May to the end of July. These records, therefore, are rather unusual, especially coming from such a northerly location. In this country one would usually expect that a second generation would first start appearing in the warmer climate represented in the south of a species' range. These specimens may represent the start of bivoltinism in *X. montanata* – perhaps a close watch should be kept for late occurrences of this species, both in the Beinn Eighe area and in other parts of the UK.

Many thanks to David Miller of Scottish Natural Heritage for keeping the two traps running so smoothly.— PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

The Mocha *Cyclophora annularia* Fabr. (*annulata* Schultze) (Lep: Geometridae): new to Middlesex, but not quite re-found in Hertfordshire

Two recent records of the Mocha *Cyclophora annularia* have been brought to my attention as Hertfordshire and Middlesex Moth Recorder. Richard Ellis, whose garden at Chorleywood is in administrative Hertfordshire, but an annoying 50 metres or so into the Buckinghamshire vice county (VC 24), trapped an example on 22 August 2006, which he correctly named before showing to me for confirmation. Within the boundaries of Watsonian Hertfordshire (Vice County 20), there have been very few reports of *Cyclophora annulata* – and none in the last century. It is included in a list for the Hitchin area by A. F. Griffith (1884. List of Lepidoptera observed in the neighbourhood of Hitchin and Knebworth , Herts. *Trans. Herts. Nat.. Hist. Soc. Fld. Club* **3**: 58 and **3**: 261) and it is listed by R. W. Bowyer for the Haileybury College area, for the period up to 1888 (*Trans. Herts. Nat.. Hist. Soc. Fld.Club* **5**: 23 – 32). A. H. Foster (1937. A list of the Lepidoptera of Hertfordshire. *Trans. Herts. Nat. Hist. Soc. Fld. Club* **20** (4): 157 – 279) also lists Tring (by Goodson) – undated, but thought to relate to the late 1800s. For Essex, Emmet & Pyman (1985. The larger moths and butterflies of Essex. *Essex Naturalist* number 8 (new series)) show nineteenth century records in three of the ten-kilometre grid squares that abut Hertfordshire on its eastern boundary; these are repeated by Brian Goodey (2004. *The moths of Essex*. Lopinga Books) who also shows a record in one additional adjacent centad for the period 1960 to 1989.

Eleven days later, on 2 September 2005, Andrew Middleton caught a female of the same species in his garden trap at Ponders End, Middlesex, again correctly identified then confirmed by myself. There are no previous records of this species in Middlesex (VC 21) recorded in Plant (1993. *Larger Moths of the London Area.* LNHS), and as far as I am aware there have been none since until now. Andrew Middleton's record is, therefore, a new record for the vice county.

I am most grateful to Richard Ellis and Andrew Middleton for readily agreeing to allow me to use their records in this note.— COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: cpauk1@ntlworld.com).

Aberrant Blood-vein *Timandra comae* Peters (Lep.: Geometridae) in Carmarthenshire

On the night of 28 June 2005, the Rothamsted Insect Survey light trap at St Clears in Carmarthenshire (trap number 592, O. S. grid reference SN 259176) caught a very unusual specimen of *Timandra comae*. The specimen did not display the normal beige background with the striking red "vein" running diagonally across both fore- and hindwings. Instead, it appeared that the "vein" had burst, infusing each wing with a dusky red colouration, merging with the usual red suffusion around the fringes of the wings.

Many thanks to Huw Jones who keeps the trap at St Clears running so efficiently.— PHILIP J. L. GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

EDITORIAL COMMENT: Phil has submitted a photograph of this moth for publication; it appears to be a rather worn example of the aberration collected by messrs. Jim Fish and Julian Reeves in Bishops Stortford, Hertfordshire, on 24 August 2001 and exhibited at the Annual Exhibition of the British Entomological and Natural History Society on 10 November 2001. That moth is illustrated in *Br. J. ent. Nat. Hist.* **15** (3/4): Plate 2, and the reader is referred to that picture.

Further evidence of a second generation of *Chrysoteuchia culmella* (L.) (Lep.: Pyralidae) in Hertfordshire.

In 2005, the Rothamsted Insect Survey "Harpenden IV" light trap (trap number 594, O. S. grid reference TL 153133) caught four rather unseasonal specimens of *Chrysoteuchia culmella*: three on the night of 17 August and a singleton on 03 September.

Chrysoteuchia culmella is normally single-brooded and on the wing in June and July (Goater, 1986. *British Pyralid Moths*. Harley Books). Out of the 709 *C. culmella* records held in the Hertfordshire moth database, only 90 are of moths caught in August (Colin Plant, pers. comm.). The majority of these were recorded

within the first week, but there are a few throughout the month and one from 31 August. The first published UK record of *C. culmella* flying after August was from Colin Plant, on 10 September 2000 (*Ent. Rec.* **117**: 272). This single male from Bishops Stortford is one of only two September entries currently in the Hertfordshire database, the other at Hertford on 5 September 2002 (Andrew Wood). Therefore the Harpenden specimen is the third.

Many of Britain's moths are either lengthening their flight periods or managing partial second broods, even in the cooler climes of north-east Scotland (e.g., Leverton, 2004. *Ent. Rec.* **116**: 25 – 32). In the note by Colin Plant, he reasoned that his specimen was possibly a migrant. However, the Harpenden individual was not caught during a period of migrant activity and is likely to be of local origin. Thus it is probable additional evidence of a partial second brood in Hertfordshire in response to recent warmer climate conditions. Many thanks to Colin Plant, the Hertfordshire and Middlesex Moth Recorder, for providing me with details from the Hertfordshire Moth Database, and for other information, and to Andrew Wood for permission to use his record. — PHILIP J L GOULD, Co-ordinator of the Rothamsted Insect Survey Light-trap Network, Plant & Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire AL5 2JQ (E-mail: phil.gould@bbsrc.ac.uk).

Marbled Beauty *Cryphia domestica* Hufn. (Lep.: Noctuidae): A very early record in Staffordshire

On the evening of 16 May 2006, I set up my home-made "black" m.v. light trap in my garden and at around 11 pm I was very surprised to attract a single Marbled Beauty *Cryphia domstica*. According to Skinner (1998. Colour identification guide to the moths of the British Isles (second edition): Viking) this species is single-brooded with adults flying in July and August; this is also my own experience. Why the moth should fly on such an early date is an enigma; perhaps global warming is the reason. The only other species to come to the light that night was a Waved Umber *Menophra abruptaria* (Thunb.) (Geometridae), at midnight.— JAN KORYSZKO, 3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire ST3 7AY.

The Ant-lion *Euroleon nostras* (Fourcroy) (Neur.: Myrmeleontidae) in North Norfolk

In August 2005 my wife and I spent a day on the North Norfolk coast. At the end of the day we walked on the sands at Wells-next-the-sea, and back to the car park through the pine-woods. This area is a pine (*Pinus*) woodland on sand, with little under-storey, mostly brambles. The trees are mainly Corsican Pine *Pinus nigra* var. *maritima*, with some Scots Pine *P. sylvestris* and Maritime Pine *P. pinaster*. In the sand, sheltered by small fallen pine trunk, I noticed an ant-lion pit and closer inspection revealed one large and two small pits. I knew ant-lions were found farther around the coast, in the Minsmere area of Suffolk (see Plant, 1994. *Provisional atlas of the lacewings and allied insects (Neuroptera, Megaloptera, Raphidioptera and*

Mecoptera) of Britain and Ireland. Biological Records Centre), but I was surprised to find them so far away from these well-known sites. I scooped out a small amount of sand to confirm that there were indeed insects present, and found one final instar larva and one cocoon, which proved to be empty. I took the sample of sand home to confirm and photograph the material and found that there was also a small larva present.

We visited the woods again the next weekend, with Colin Plant and Marcel Ashby, and returned the two larvae to their original position. There was still one ant-lion pit, and we spent a few hours looking for more. We found two more sites where there were two or three pits, and several promising-looking, but unoccupied sites, though these areas were few and far between. There was no further opportunity to visit the site to look for ant lions because the weather turned cold.

During 2006 we visited the site again on 17 April and easily found several hundred small pits made by over-wintering (presumably second instar) larvae. Subsequently, students from the Zoology Department of the University of Cambridge surveyed the site over ten days at the end of August 2006 and found a total of 480 pits, indicating that the species is established at Wells. According to Plant (1997. *Investigations into the distribution, status and ecology of the ant-lion* Euroleon nostras *(Geoffroy in Fourcroy, 1785) (Neuroptera: Myrmeleontidae) in England during 1997* — unpublished full report in library at English nature, Peterborough and an edited version bearing the same title in Plant, 1998. *Suffolk Natural History* **34**: 69 - 79), larvae regularly build new pits and a reasonably reliable estimation of larval numbers can be made by simply dividing the number of autumn pits by three; this suggests a population in the order of 160 larvae at Wells. Plant also recorded that the average egg-load of a gravid female may be as low as twenty. Thus, the Wells colony may have originated from eight adult females.

The English population of *E. nostras* has been present on the Suffolk Sandlings probably since 1929 (Plant, *op. cit.*), but in this time it has never extended its range other than to form satellite colonies, largely of a temporary nature, within a few miles of the main core colony at Minsmere. It was also stated that there was ample evidence to suggest that the maximum distance over which a female *E. nostras* might travel is about twenty miles. The discovery of an established breeding colony on the North Norfolk coast is, therefore, surprising – and particularly so because there do not appear to be any other colonies between here and Minsmere, a distance of some 90 kilometres in a straight line (or 130 kilometres if they were to follow the coast around).

I am most grateful to English Nature for permission to examine ant-lions at Wells, a part of the Holkham National Nature Reserve, and for their helpful co-operation with the research work. Information on the species of pine trees present was kindly provided by Peter Lambley at English Nature.— Roger Northfield, 9 Stulpfield Road, Grantchester, Cambs CB3 9NL.

Editorial Comment: Readers are reminded that a research permit is required to collect insect specimens on all National Nature Reserves; applications should be made via the appropriate Regional Office.

Jersey Tiger *Euplagia quadripunctaria* (Poda) (Lep.: Arctiidae) in south east London

According to Baron de Worms, in his chapter on the family Arctiidae in volume 9 of *Moths and Butterflies of Great Britain and Ireland*, the Jersey Tiger has been established as a breeding species on the south coast of Devon, between Seaton to Torquay, since about 1880. In the past 126 years it has moved rather little, although it is now well known at a number of inland sites. A scan of the annual reviews of immigrant Lepidoptera in the pages of this journal reveals that in the past ten years or so there has been a slight extension of range eastwards across Dorset and as far as the Isle of Wight, though apparently no further other than the well known and quite isolated population in the Folkestone area of Kent.

It was, therefore, something of a surprise to receive a telephone call from no less a body than ITN (Independent Television News) asking if I could do a piece to camera on the Jersey Tigers breeding in Lewisham! Trying hard not to sound completely ignorant I agreed and immediately set about doing some hurried research. This uncovered the following data for Jersey Tiger in London. Several records are unverified, especially those from the "*Back Garden Moths website*", where the names of the observers are less than complete. However, it seems most probable that all are correct. The records affect the border area between the vice counties of West Kent (16) and Surrey (17) and are recorded in both places:

Devonshire Road Nature Reserve, Forest Hill "for the past three years or so" [writing in 2006] "a local resident has photographed pairs *in copula*" and also at Garthorne Road Nature Reserve, which lies on the other side of the railway track (per Wayne Butler, Ecology Officer, L. B. Lewisham); Forest Hill, 2005 ("Rob", Back Garden Moths website); Honor Oak Park, one on a garden fence, 14.vii.2006 ("Andrew", Back Garden Moths website); Forest Hill, 15.vii.2006, "Flying in back garden during sunny afternoons. Same species, same place one year ago" ("Rob", Back Garden Moths website); Forest Hill, one alive inside a house on 25.vii.2006, Tania Joyce (Back Garden Moths website); Crofton Park, 26.vii. & 27.vii.2006, resting on back door of a house ("Cate", Back Garden Moths website); Crofton Park, TQ 364746, flying and settling on wooden fence in rear garden at Brockley Road on 2.viii.2006 ("Chris", Back Garden Moths website); Brockley, at least 8 in a back garden, 3.viii.2006, Camilla Goddard. One red hind-wing form female seen and verified by CWP and filmed for television; Beckenham (16), one red hind-winged form at mv light 5.viii.2006 (verified from photograph by CWP) and a yellow-winged f. *lutescens* on 15.viii.2006 (John. Nisbett); Forest Hill, one in a garden on three occasions over two weeks in August. The date of 14.viii.2006 is quoted ("Rob", Back Garden Moths website); Brockley, 5 to 7 individuals in and around a back garden [in 2006] ("Becky", Back Garden Moths website); Wandsworth Common, 2.ix.2006, Tony Bell (det. Paul Wheeler, from photograph).

There is also a single record from north London, constituting a first for the species in Middlesex, (VC 21): Highgate Wood (21), one on 7.viii.2006, f. *lutescens*, (Cindy Blaney via M. Hammerson). I suspect that the list may be incomplete and I welcome additional records.— Colin W. Plant, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP (E-mail: cpauk1@ntlworld.com).

Records of mountain butterflies in Eastern Turkey, July 1997

Between 16 and 23 July 1997 I made the following records of butterflies while trekking in mountains that included the Kaçkar Dağlari (40° 50' N: 41°.10' E; Artvin Province) and others around the city of Erzurum (39° 55' N: 41° 17' E), Eastern Turkey (see Dubin & Lucas, 1989. *Trekking in Turkey.* Lonely Planet Publications. Australia). It was a wet July and, according to the entomologist I met in Turkey, a poor year for butterflies. I have identified specimens using a number of reference books but base the nomenclature I use in the following list mainly on the classic work of Hesselbarth, Oorschot & Wagener (1995. *Die Tagfalter der Türkei.* Germany). Identification has been confirmed where possible by genitalia. Taxa are listed in alphabetical order by genus. A brief description of capture locations with some other observations is given below the taxon list. I recommend Eastern Turkey for its spirit-raising beauty, the friendliness of the people and the diverse flora and fauna.

Taxon (code relates to specimen label data)	**Location**
Aglais urticae turcica (Staudinger, 1861)	2: 23a (plate Q)
Agrodiaetus ?demavendi (Pfeiffer, 1938)	2: 21a (plate Q)
Agrodiaetus damon kotshubeji (Sovinsky, 1916)	2: 19b, 2: 23 (plate Q)
Agrodiaetus hopfferi (Herrich-Schäffer, 1851)	2: 16 (plate Q)
Agrodiaetus turcicus (Koçak, 1977)	2: 19b
Aricia ?artaxerxes sheljuzhkoi (Obraztsov, 1935)	2: 18, 2: 19a, 2: 19b
Aricia agestis (Denis & Schiffermüller, 1775)	2: 16
Boloria caucasica (Lederer, 1852)	2: 19b (plate P)
Brenthis daphne (Bergsträsser, 1780)	2: 18
Brenthis hecate (Denis & Schiffermüller, 1775)	2: 18, 2: 19a, 2: 21b
Carcharodus alceae (Esper, 1780)	2:16
Carcharodus lavatherae tauricus Reverdin, 1915	2: 18, 2: 19a
Celastrina argiolus (Linnaeus, 1758)	2: 18
Chazara bischoffii (Herrich-Schäffer, 1846)	2: 16 (plate P)
Chazara briseis meridionalis (Staudinger, 1886)	2: 21a
Chazara persephone transiens (Zerny, 1923)	2: 21a (plate Q)
Chilades trochylus (Freyer, 1845)	2: 16
Coenonympha leander (Esper, 1784)	2: 19b, 2: 23 (plate Q)
Coenonympha symphyta Lederer, 1870	2: 19b
Colias alfacariensis Ribbe, 1905	2: 18, 2: 20

Plate P

Left-hand column (top to bottom): *Parnassius mnemosyne caucasica* Verity, 1911, *Erebia melancholica* Herrich-Schäffer, 1846, *Erebia graucasica transcaucasica* Warren, 1950, *Erebia hewitsonii* Lederer, 1864, *Plebeius pylaon sephirus* (Frivaldszky, 1835) (underside, aberration, genitalia prep. AWD380, see fig 1), *Boloria caucasica* (Lederer, 1852).

Right-hand column (top to bottom): *Colias thisoa* Ménétriés, 1832, *Maculinea alcon monticola* (Staudinger, 1901), *Hipparchia parisatis* (Kollar, 1849), *Chazara bischoffii* (Herrich-Schäffer, 1846), *Melitaea aurelia ciscaucasica* Rjabov, 1926, *Euphydryas aurinia bulgarica* Fruhstorfer, 1917.

Plate P

Colias thisoa Ménétriés, 1832	2: 19b (plate P)
Erebia aethiops melusina Herrich-Schäffer, 1847	2: 18 (plate Q)
Erebia graucasica transcaucasica Warren, 1950	2: 19b (plate P)
Erebia hewitsonii Lederer, 1864	2: 19b (plate P)
Erebia melancholica Herrich-Schäffer, 1846	2: 19b (plate P)
Euphydryas aurinia bulgarica (Fruhstorfer, 1917)	2: 19b (plate P)
Fabriciana adippe (Denis & Schiffermüller, 1775)	2: 19a
Gegenes nostrodamus (Fabricius, 1793)	2: 16
Hipparchia parisatis (Kollar, 1849)	2: 16 (plate P)
Hipparchia statilinus (Hufnagel, 1766)	2: 16
Hipparchia syriaca (Staudinger, 1871)	2: 18
Hyponephele lupina intermedia *(Staudinger, 1886)*	*2: 21a*
Iphiclides podalirius (Linnaeus, 1758)	2: 18
Lasiommata megera transcaspica (Staudinger, 1901)	2: 16
Leptidea ?duponcheli lorkovici (Pfeiffer, 1932)	2: 21a
Lycaena alciphron melibaeus (Staudinger, 1878)	2: 16, 2: 18 (plate Q)
Lycaena candens (Herrich-Schäffer, 1844)	2: 21b
Lycaena thetis Klug, 1834	2: 23 (plate Q)
Lycaena tityrus (Poda, 1761)	2: 18
Lycaena vigaureae (Linnaeus, 1758)	2: 23
Lysandra bellargus (Rottemburg, 1775)	2: 21a
Maculinea alcon monticola (Staudinger, 1901)	2: 19b, 2: 21b (plate P)
Maniola jurtina phormia (Fruhstorfer, 1909)	2: 17
Melanargia larissa noacki Wagener, 1983	2: 21a, 2: 23
Melanargia russiae (Esper, 1783)	2: 23
Meleageria daphnis versicolor (Heyne, 1895)	2: 17, 2: 18, 2: 20, 2: 21a, 2: 23
Melitaea ? interrupta Kolenati, 1846	2: 18, 2: 19b
Melitaea athalia (Rottemburg, 1775)	2: 18, 2: 19a, 2: 19b
Melitaea aurelia ciscaucasica Rjabov, 1926	2: 23 (plate P)
Melitaea cinxia (Linnaeus, 1758)	2: 19b
Melitaea didyma (Esper, 1780)	2: 18, 2: 19a, 2: 19b
Mesoacidalia aglaja (Linnaeus, 1758)	2: 19a
Ochlodes venatus faunus (Turati, 1905)	2: 17
Pararge aegeria tircis (Godart, 1821)	2: 18
Parnassius apollo (Linnaeus, 1758)	2: 19a, 2: 21b
Parnassius mnemosyne caucasica Verity, 1911	2: 19b (plate P)
Pieris napi pseudorapae Verity, 1908	2: 19b
Pieris rapae (Linnaeus, 1758)	2: 16, 2: 18, 2: 21a
Plebeius anteros crassipunctus (Christoph, 1893)	2: 17 (plate Q)
Plebeius argus aegidion (Meisner, 1818)	2: 17, 2: 19b, 2: 21b, 2: 23
Plebeius eumendon (Esper, 1780)	2: 19b
Plebeius eurypilus (Freyer, 1851)	2: 23
Plebeius idas baldur (Hemming, 1934)	2: 19b, 2: 23
Plebeius pylaon sephirus (Frivaldszky, 1835)	2: 19a (plate P; fig 1)
Plebeius pyrenaicus dardanus (Freyer, 1844)	2: 19b (plate Q)
Polyommatus aedon myrrhinus (Staudinger, 1901)	2: 17, 2: 18, 2: 19a, 2:19b, 2: 23 (plate Q)
Polyommatus amandus (Schneider, 1792)	2: 18, 2: 19a
Polyommatus coelestinus (Eversmann, 1843)	2: 19b
Polyommatus corydonius caucasicus (Lederer, 1870)	2: 17, 2: 18

Polyommatus eros yildizae Koçak, 1977	2: 18, ?2: 21b (plate Q)
Polyommatus icarus (Rottemburg, 1775)	2: 18, 2: 19a, 2: 19b
Polyommatus semiargus bellis (Freyer, 1842)	2: 19b, 2: 23
Polyommatus thersites (Cantener, 1835)	2: 21a
Pontia chloridice (Hübner, 1813)	2: 16
Pontia edusa (Fabricius, 1777)	2: 16
Pseudochazara beroe (Herrich-Schäffer, 1844)	2: 21b, ?2: 23 (plate Q)
Pseudochazara mniszechii caucasica (Lederer, 1864)	2: 20, 2: 21a (plate Q)
Pyrgus serratulae major (Staudinger, 1878)	2: 19b
Satyrium myrtale armenum (Rebel, 1901)	2: 21b
Satyrus amasinus Staudinger, 1861	2: 20, 2: 21a
Spialia orbifer (Hübner, 1823)	2: 16, 2: 18, 2: 19a, 2: 21b
Spialia phlomidis (Herrich-Schäffer, 1845)	2: 16
Tarucus balkanicus (Freyer, 1844)	2: 16 (plate Q)
Thaleropis ionia (Eversmann, 1851)	2: 16
Thymelicus lineola (Ochsenheimer, 1808)	2: 19a, 2: 23
Thymelicus sylvestris syriacus (Tutt, 1905)	2: 23
Turanana endymion (Freyer, 1850)	2: 20, 2: 21a

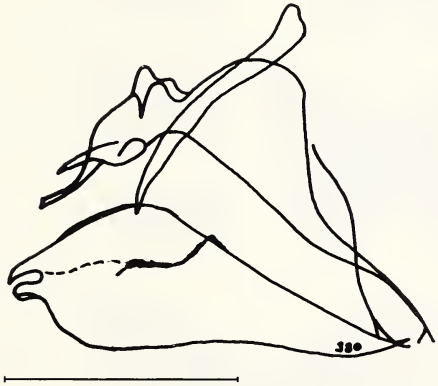


Figure 1. Lateral view of genitalia (prep. AWD380) from a male *Plebeius pylaon sephirus* (Frivaldszky, 1835) with aberrant underside wing pattern (see Plate 1, left-hand column). Scale bar represents 1 mm.

Plate Q

Left-hand column (top to bottom): *Pseudochazara beroe* (Herrich-Schäffer, 1844), *Polyommatus aedon myrrhinus* (Staudinger, 1901) (male and female), *Agrodiaetus damon kotshubeji* (Sovinsky, 1916) (male and female), *Erebia aethiops melusina* Herrich-Schäffer, 1847, *Lycaena alciphron melibaeus* (Staudinger, 1878).

Centre column (top to bottom): *Plebieus pyrenaicus dardanus* (Freyer, 1844), *Agrodiaetus hopfferi* (Herrich-Schäffer, 1851), *Polyommatus eros yildizae* Koçak, 1977, *Aglais urticae turcica* (Staudinger, 1861), *Lycaena thetis* Klug, 1834.

Right-hand column (top to bottom): *Pseudochazara mniszechii caucasica* (Lederer, 1864), *Plebeius anteros crassipunctus* (Christoph, 1893), *Agrodiaetus ?demavendi* (Pfeiffer, 1938), *Tarucus balkanicus* (Freyer, 1844), *Chazara persephone transiens* (Zerny, 1932), *Coenonympha leander* (Esper, 1784).

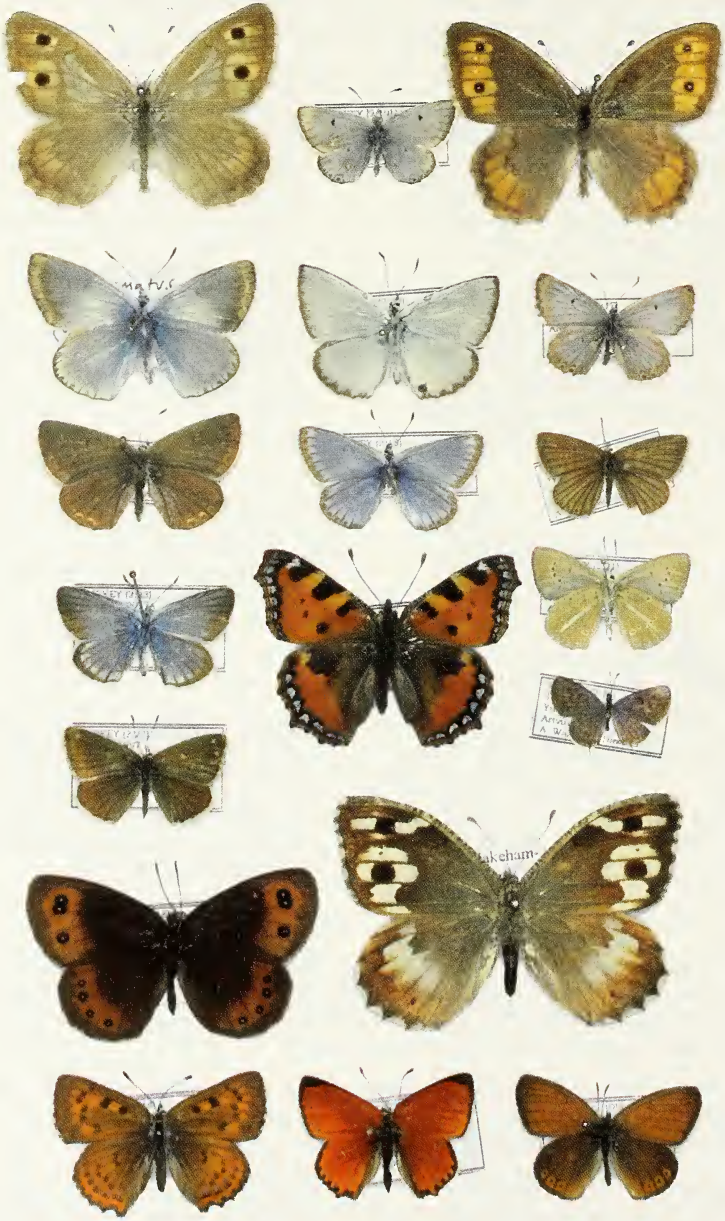


Plate Q

Key to locations

2:16. Yusufeli (40°50'N: 41°33'E): 16-17 July 1997, village at 650m above sea level north of Erzurum in the foothills of the Kaçkar Mountains (Artvin Province). Hot and humid with frequent rain showers. Just below Yusufeli the Barhal River meets the Çoruh River. These are young mountain rivers, fast flowing and in steep 'v'-shaped valleys of red, treeless crags with nearly no soil cover. *Chazara bischoffii*, whose wing colours perfectly match the local rocks, were flying up and down the valley sides. There are small areas of lush cultivation at the rivers' edges growing lucerne and fruit trees.

2:18. Barhal (40°59'N: 41°25'E): 18 July 1997, village at 1250 m (also known as Altiparmak) with a mosque, a store and a few houses next to the Barhal River. Rain showers. There are alder, walnut and mulberry trees, small meadows and fertile areas in the river valley, which is relatively narrow with crags on either side. These are similar to those at Yusufeli, but here the crags hold conifer and some deciduous trees. In the village square sat a man with a dead brown bear that I assumed he had shot. He was smoking with a look of total pride and satisfaction. Later he skinned the bear while an American film crew recorded the scene. He appeared to be a local policeman or ranger, although he wore no uniform. The following morning he blew a whistle when he saw my insect net. He indicated that I was not allowed to collect insects here. I showed him my notebook. Then for reasons I do not know, he patted me on the shoulder in a friendly manner and indicated that I should carry on.

2:18b. Steep sub-alpine meadows among conifer trees at 1700 – 1800 m above Barhal. Weather windy and cloudy, with brief periods of sunshine.

2:19. Yaylalar (40°52'N: 41°15'E): 19 July 1997, summer village at 1945 m (also known as Heveg), well above the tree line. Good summer weather. I travelled here early in the morning from Barhal in an estate car with three men and four six-foot grass scythes. The glistening blades were in the back, their handles running forward between the passengers. A sudden jolt on the uneven road could have proved fatal. The flocks of sheep and goats were going out to pasture and the sunlight was just beginning to catch the tops of the mountains and creep down into the valleys. The haymakers were heading out to the meadows. Women and girls in colourful skirts and headscarves were carrying large baskets and scythes. Ponies and mules were being ridden out to bring in huge baskets of hay. The houses of Yaylalar are badly built and serve only as summer dwellings for the people of Barhal. The sound of the Barhal River is deafening here. Wood smoke from domestic fires was rising straight up into cold, thin air.

2:19a. Meadows near Yaylalar (1900-2200 m): magnificent clear blue sky and vast slopes of flower-rich, sub-alpine pasture leading away to peaks with patches of snow. On each side of the river haymaking was underway. It is no exaggeration to say that there were thousands of butterflies. A passing Landrover crushed many butterflies that were mud-puddling on a track.

2:19b. Sub-alpine pasture (2200-2900 m.): many flowers, but fewer butterflies here.

2:19c. High pasture and scree slopes (2900 + m.): few butterflies seen and no specimens taken. The sun set early in this valley: about 4.30 pm and it was totally dark by 8.30 pm. A group of ten colourfully dressed horsemen cantered past me and then returned later bringing a couple of bulls down from high pasture. After dark, the stars were magnificently bright in a clear sky.

2:20 and 2:21a Pirnakapan (39°58'N: 40°34'E): 20 – 21 July 1997, village near town of Aşkale (39°55'N: 40°40'E), Erzurum Province, 1900 m, very dry, red, sandy, barren hills, some streams. Weather very hot and sunny. Further along the road and up hill (2200 m) *Pseudochazara mniszechii caucasica* were very abundant: both males and females in dry, grassy areas by the roadside.

2:21b. A plateau, 2350 m, near Kopdaği Geçidi, Bayburt Province (40°15'N: 40°15'E): there were a few conifers growing here, but it was mostly open with streams. Sunny weather. A few male *Pseudochazara beroe* flew past very close to the ground. They appeared singly and flew with determination in a straight line.

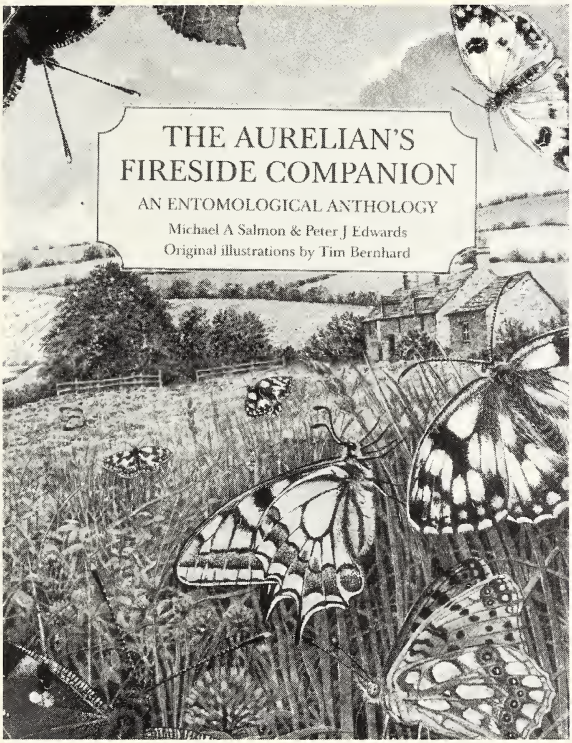
2:23. Palandöken Ski Centre in mountains near Erzurum. 2300m: flowery hay meadows with many Zygaenidae. I collect some specimens for Gerry Tremewan (Cornwall). 2500m: dry meadows and a dirt road. At 2.30 pm it began to rain heavily. A quail called: 'whit-me-lips' from a hay meadow. A *Colias* sp. was flying at 2900 m over rocky slopes, but too fast to catch for close identification.

2:23a. Rocky slopes at 3200 m: cloudy weather. Bulldozers were building ski-slopes.

I thank the following people for their help with this project: Susie Gibbs, Canon William and the late Lady Sarah Gibbs (England), Apo and Selina Akinçi (England), the late Anthony Bedford-Russell, Prof. Ted Benton and Vic Barnham (England), Haluk and Deniz Şengeç (Istanbul), Dr Paul Dollé and Jean Hervillary (France), Jean and Denise Hanus (France), Jaan Luig, Tõnu Keskűla and Sven Salo (Estonia), Zdenek Mrácek (Czech Republic). SAC Heidi Cox (Photo Section, Mount Pleasant Airfield, Falkland Islands) photographed the specimens.— ANDREW WAKEHAM-DAWSON, Mill Laine Farm, Offham, Lewes, East Sussex BN7 3QB.

BOOK REVIEWS

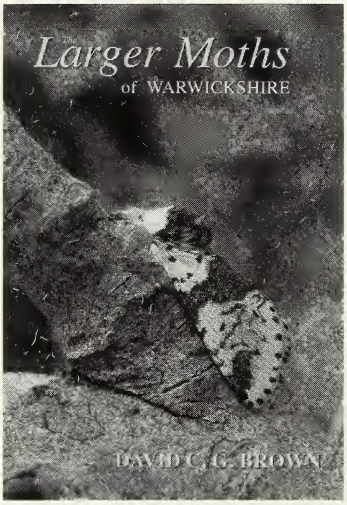
The Aurelian's fireside companion: An entomological anthology by **Michael A. Salmon and Peter J. Edwards.** 428 pp., plus 8 pages of colour plates, numerous black and white photographs and original drawings by **Tim Bernhard**. 282 x 217 mm., hardbound, ISBN 0 9537236 1 5. Paphia Publishing, 2005.



Printed in a limited edition of one thousand numbered copies, this book is both entertaining and informative, combining these two aspects seamlessly and creating the perfect companion to *The Aurelian Legacy*, written by Michael Salmon and also published by Paphia, in 2000.

This is a book to read, not one to read about. After a Foreword, various credits and acknowledgements, a Preface and then a Prologue, seven chapters follow with the intriguing titles of "The Curious case of Albin's Hampstead Eye", "Noctes Ambrosianae – light traps and sugar", "I'll see you in Hell – an afternoon near Oxford", "Five miles from anywhere – butterfly hunting in the British Isles", "Travellers' tales – butterfly hunting overseas", "Well Mr Holmes, what do you make of these? – a cabinet of entomological curiosities" and finally "Some gentlemen of the net – and a Rannoch Sprawler". Within each are to be found many separately headed texts covering a whole array of matters from anecdotal tales, biographies and all sorts. There is a wonderful repetition of an 1858 article in the *Entomologist's Weekly Intelligencer* decrying the high cost of postage to send insect specimens; then there is a series of four ancient monochromes depicting "Style and Costume" amongst four "gentlemen of the net". No two items are the same – the authors are to be congratulated for their diligence and skill is selecting and bringing together such a disparate array of material from such a phenomenally wide range of sources and combining it into a single work such that it flows logically and makes great sense to the reader. This is a book to dip into on a regular basis – keep it on the bedside table, in the lounge or even in the loo, but make sure that when the opportunity arises to spend a couple of minutes reading this is the first book that you pick up.

The larger moths of Warwickshire by **David C. G. Brown.** 382 pp., 24 pages of colour plates, over 500 colour distribution maps, 31 figures, 25 tables. 245 x 170 mm., Hardbound, ISBN 0 9551086 1 6. Atropos Publishing , 2006. £35 post free from Atropos Publishing 36 Tinker Lane, Meltham, Holmfirth HD9 4EX.



Although actually published by Atropos Publishing, this work was, in reality, funded almost entirely by the author from his own pocket – to the tune of £12,000 – a slightly frightening revelation for a reviewer who is in the midst of seeking possible sources of funding for his own similar work covering Hertfordshire! Whilst I am very much tempted to dig deeper into the parlous state of science funding in general, and entomological funding in particular, this is probably neither the time nor the place – particularly when confronted with such a splendidly magnificent tome to discuss. However, it is indeed relevant to mention things that may not have been had the author not been able, for this reason, to exert total control of the process. From the superb photograph of *Furcula bicuspis* (Borkh.) (Alder Kitten) on the dust jacket to the choice of the heavy, glossy paper this work smacks of professionalism from start to finish. The county status of all the species is presented and the larval foodplants are listed, those recorded for Warwickshire being marked with an asterisk. Flight periods within the county are given. Free text accompanies tetrad distribution maps that utilise five different symbols – a cross to represent pre-1904 data, a black dot for records between 1905 and 1930, a black square for those from 19341 to 1955, a grey square for 1956 to 1979 and finally a red square for 1980 onwards. This works very well and there is no confusion between any of the map symbols – even with my failing eyesight. For rarer immigrants and a few other species a complete list of records is given.

Doubtfully recorded species are relegated to an Appendix, which is fine, though it might have been useful to also include them in name only in the correct sequence in the text together with a reference to the Appendix – the modern researcher often lacks the thoroughness which some of us were taught at the old school! Other appendices cover abbreviations of the names of the taxonomic authors, Scientific names of plants mentioned, a site gazetteer, a list of contributors, lists of publications for adjoining counties, contact details of local groups and societies and finally a Bibliography and references.

There is little to criticise. I would have liked to have seen flight periods presented graphically, as this makes it so much easier to detect the voltinism of a species, and there is some slight inconsistency in the presentation of some data (e.g., the "garden moth trap totals" by year are presented as a histogram for *Chloroclysta siterata* (Hufn.) and as a graph line for *Eupithecia tripunctaria* (H.- S.). There may be other minor points, but none that could possibly detract from this work which, David has confessed to me, sees the completion of a lifelong ambition. Amongst the many county moth books produced, some contain a wealth of important information on the moths; others are just nice books to have and to hold. Occasionally – just occasionally – along comes a book that satisfies both requirements. This is just such a work — buy it!

Continued from back cover

Book Reviews

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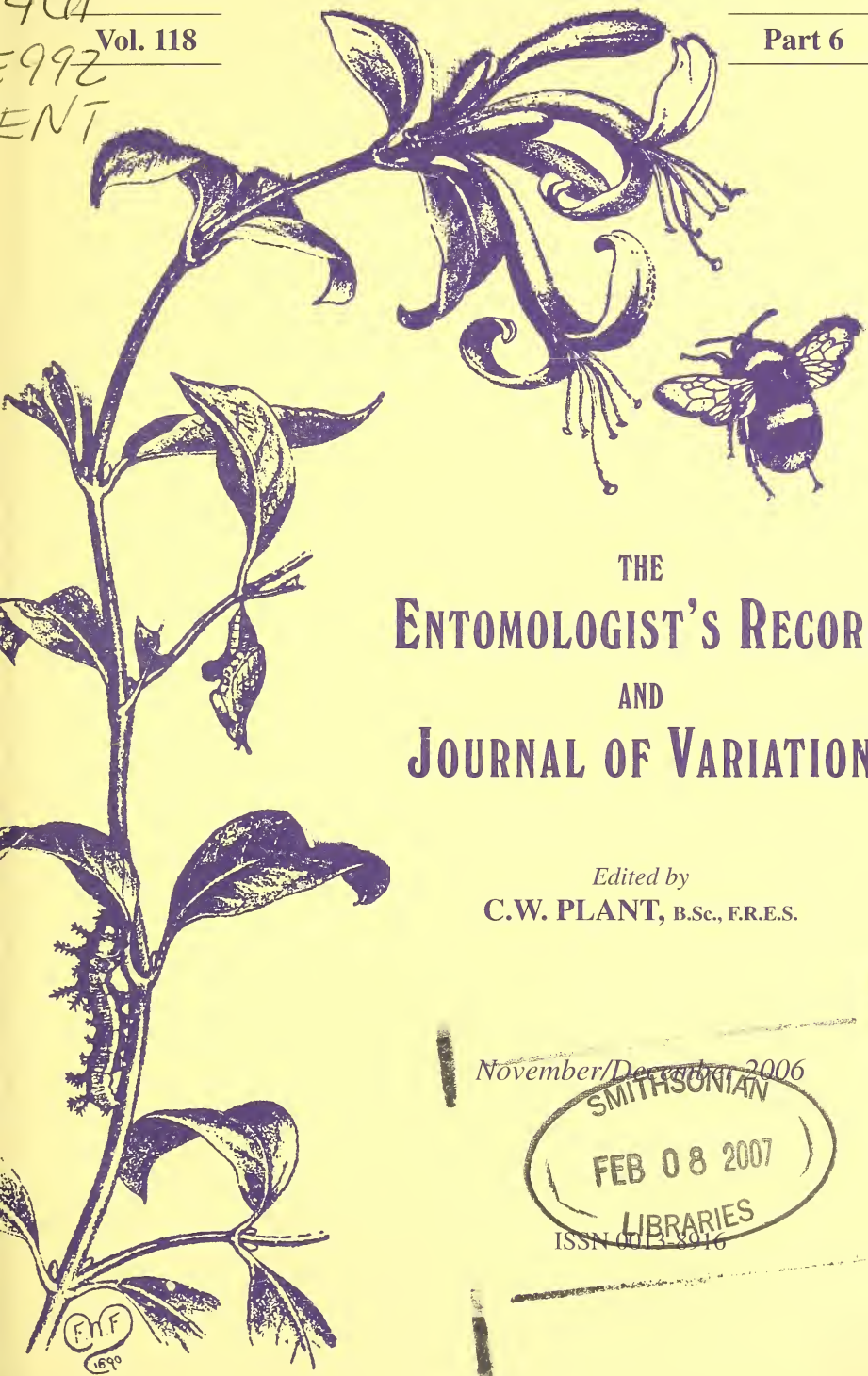

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Editor

C.W. PLANT, B.Sc., F.R.E.S.

14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

Registrar

R.F. McCormick, F.R.E.S.

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- We accept all formats from hand-written notes upwards. However, we prefer submissions via e-mail, or on CD. Files must be in a PC-compatible format that is readable by Microsoft Word 2000. Originals are required for all photographs, drawings, diagrams, graphs, histograms and similar, though Tables may be incorporated into word processor files. For details, visit the web site or contact the Editor direct.

MICROLEPIDOPTERA REVIEW OF 2005

[1] J. R. Langmaid and [2] M. R. Young

[1] *Wilverley, 1 Dorrita Close, Southsea , Hampshire PO4 0NY. (john@langmaidj.freeserve.co.uk)*

[2] *Culterty Field Station, Department of Zoology, University of Aberdeen, Newburgh, Aberdeenshire AB41 6AA. (m.young@abdn.ac.uk)*

Abstract

Noteworthy records of microlepidoptera made in the British Isles during 2005 are summarised. These include *Dichelia histrionana* (Fröl.), *Euchromius cambridgei* (Zell.), *Sciota rhenella* (Zinck.), *Stenoptila annadactyla* Sutter and *Emmelina argoteles* (Meyr.) new to the British Isles and several new vice-county records.

Introduction

Our knowledge of the distribution and status of Britain's microlepidoptera has once more been significantly extended by the efforts of 70 recorders and we are most grateful for their information, so freely given. It seems astounding that new records can continue to accumulate at an undiminished rate but there are roughly 1500 species and 112 vice-counties and so perhaps there is much scope for future work. If moths are extending their range then this could account for many of the new records but there remains much infilling as well, so that those of us who enjoy the simple pleasure of making 'new' records have years of pleasure ahead. Nearly 90 species have been recorded as new to Britain since this review began in 1980.

We have been gently taken to task for not referring explicitly to cases where species have changed their names and we acknowledge that this can indeed be less than helpful. Nevertheless, this is not intended to be a taxonomic review and we do not have space for detailed discussion of such changes. Langmaid and Agassiz (2005 *Ent. Rec.* **117**:143-147) have collated changes that are needed to update Bradley (2000), which is the checklist that we use, and readers should refer directly that that collation. However, we do intend to make very brief reference to name changes in future and we have also added the familiar synonyms of species in the current review that have recently changed (for example, there is an entry for '*Narycia duplicella* (Goeze) (= *monilifera* Geoff.)'). Name changes are frequently confusing and may seem unnecessary but a significant number occur when a species group is split up (as has happened recently with some plumes), or are needed to clarify which species is actually being studied. We cannot avoid them.

The year 2005 was generally both drier and warmer than the long-term average, and included some extreme conditions. January and early February were mild, with high rainfall in the south but little elsewhere; however, late February turned significantly colder with snow that extended into early March. Thereafter that month was both drier, warmer and more cloudy than usual. April brought welcome average temperatures and rainfall but May was very dry. It was also an average temperature but in the context of the warmer springs of recent years April and May seemed rather chilly at times. In June the temperature rose to well above average and there was very little rain, except in the north. After a cloudy start there was then a spell of very

hot weather in July, well above the long-term average, but with significant rain in the south and east, including thunderstorms. August was average in temperature and again dry, except for some parts of the south and in East Anglia, before a return to unusually warm conditions in September. October was wet, cloudy and cool in the north and west, but warm in the south and east. The warm weather persisted into November but turned cold in the second half of the month, with average rainfall everywhere except in the dry south-east corner. Finally, December was cool in the south but unusually warm further north and with low rainfall everywhere. The warmest days were in London in mid July, reaching 33°C, and the coldest in the central Highlands in February. In January gales well above 100mph battered the Outer Hebrides and western Scotland and extreme rainstorms flooded many places, including Shap, with 225mm falling in three days, and Carlisle, with 109mm in a day in October. Many places had some episodes of deep snowfall, including 50cm in Durham in February.

Over the last ten years our microlepidoptera have generally had to cope with drier conditions in the south and east, but wetter winters in the north and west. The winters have been unusually mild everywhere, with reduced snow cover, and the summers have been hot. The easily observed trend to earlier springs and later autumns, that have resulted in significant changes in the flowering times of plants, cannot be immediately associated with a changing phenology or distribution in our microlepidoptera, although some recent invaders have continued their rapid spread. Most spectacularly, *Cameraria ohridella* Deschka & Dimic is now widespread into the midlands and *Phyllonorycter leucographella* (Zeller) is found in Scotland on the mainland and has made the jump to Ireland.

Dichelia histrionana (Frölich) was found in Wood Green in 2003 but has recently been reported as new to the British Isles (Sterling and Ashby, 2006 *Ent. Rec.* **118**: 19-22). It is a common central European species, whose larvae feed on fir and spruce but no further specimens have been found, so it may have been accidentally imported. However, it can be confused with related tortricine species and other specimens may have been overlooked. Two other completely new species are members of the Pyralidae. The specimen of *Euchromius cambridgei* (Zeller) found in Northamptonshire in August 2005 was probably adventive, as its normal range is in southern Europe, Africa and the Middle East (Sharpe and Manning, 2006 *Ent. Rec.* **118**: 17-18). Larvae of *Sciota rhenella* (Zincken) feed on poplars and the species occurs as far north as Denmark and so its occurrence in Kent may well presage further colonisation (Clancy, 2005 *Atropos* **27**: 24-31). Finally, recent work on closely related species groups of plume moths, leading to focussed searches for likely species, has resulted in the finding of *Stenoptilia annadactyla* Sutter at Hockwold and *Emmelina argoteles* (Meyrick) at Wicken.

Ostrinia nubilalis (Hübner) has been found as a migrant on Shetland new to Scotland. New records for Ireland are *Caloptilia rufipennella* (Hübner), still spreading on sycamore; *Phyllonorycter leucographella* on *Pyracantha*; *Chrysoclista lathamella* Fletcher and *Antigastra catalaunalis* (Duponchel). In Wales, *Bankesia conspurcatella* Zeller was found in Cardiff; *Caryocolum blandulella* (Tutt) at Pembrey Burrows and *Syncopacma cinctella* (Clerck) at Pembrey Forest; *Mompha lacteella* (Stephens) at Maesteg and *Platytes alpinella* (Hübner) at Nevern.

We welcome notes on foodplants and life histories, and it is notable that larvae of *Rhigognostis incarnatella* (Steudel) were found on *Draba incana* on Meall nan Tarmachan (Bland 2006 *Ent. Rec.* **118**: 11). This species is principally found in highland valleys but its larvae are usually found on *Hesperis matronalis*, which is a garden escape. Bland (2006 *BJENH* **19**: 37) found larvae of *Schreckensteinia festaliella* (Hübner) feeding on hazel in South Uist, which is a bizarre choice of foodplant for a species previously found restricted to relatives of *Rubus* spp.

We are already accumulating new records for 2006 and would welcome more, preferably with national grid references and as WORD files set out exactly in the format that we use. These may be sent to JRL's email address, 'john@langmaidj.freeserve.co.uk', or to his postal address. Foodplant details are also welcome.

We are again most grateful to our many recorders for 2005, namely D.J.L. Agassiz, J.S. Baker, H.E. Beaumont, D.T. Biggs, K.P. Bland, K.G.M. Bond, S.D.S. Bosanquet, E.D. Chesmore, P. Clark, P. Clement, J. Clifton, G.A. Collins, P.D.M. Costen, D. Curtis, D. Davidson, A.M. Davis, J.R. Dawson, B. Dickerson, R.J. Dickson, S. Dunlop, B. Elliott, R. Elliott, D. Emley, C.H. Fletcher, T.H. Freed, R.G. Gaunt, R.W. Goff, B. Goodey, A.N. Graham, J.E. Graham, D.G. Green, N. Gregory, J. Harold, M.W. Harper, C. Hart, R.J. Heckford, B.P. Henwood, J.B. Higgott, S.H. Hind, M.R. Honey, S.A. Knill-Jones, J.R. Langmaid, N.R. Lowe, J.A. McGill, S. Nash, M. O'Donnell, R.M. Palmer, S.M. Palmer, M.S. Parsons, S.J. Patton, M.G. Pennington, C. W. Plant, J. Porter, A.W. Prichard, K. Saul, M.P. Skevington, D.J. Slade, E.G. Smith, I.F. Smith, M.H. Smith, P.H. Sterling, N.J. Stone, R. Terry, I.R. Thirlwell, J. Thompson, W.G. Tremewan, A. Tyner, J. Waddell, M.J. Wall, D. Williams, M.R. Young. These recorders are indicated in the text by their initials. Otherwise names of recorders are set out in full and SEM refers to the Scottish Entomologists' Meeting. In 2004 this meeting was held in Crianlarich (note the error in the 2004 review) and in 2005 in Newton Stewart in SW Scotland.

RIS refers to Rothamsted Insect Survey, VCH to Victoria County History, and journals are abbreviated as follows: *Ent. Rec.* for *Entomologist's Record and Journal of Variation*; *Ent. Gaz.* for *Entomologist's Gazette*; *Atropos* is named in full; *BJENH* for *British Journal of Entomology and Natural History*. New vice-county records are shown with the VC number both <u>underlined</u> and in **bold** type.

SYSTEMATIC LIST

MICROPTERIGIDAE

3 *Micropterix aureatella* (Scop.) — Barnland T1463 (**<u>H12</u>**) 17.vi.2005 — MO'D; Mongorrey, Raphoe C2406 (**<u>H34</u>**) 2.vi.2005, det AT from photograph — SD

4 *M. aruncella* (Scop.) — Barnland T1463 (**<u>H12</u>**) 25.vi.2005 — MO'D

5 *M. calthella* (Linn.) — Kinloch Hills NG7315 (**<u>104</u>**) 24.v.2005 — DW

ERIOCRANIIDAE

7 *Eriocrania chrysolepidella* Zell. — Lineover Wood SO9818 (**<u>33</u>**) tenanted mine on *Corylus* 9.v.2005; Collinpark Wood SO7428 (**<u>34</u>**) vacated mine on *Corylus* 21.v.2005 — G.H.J. Meredith *per* RGG

8 *E. unimaculella* (Zett.) — Swithland Reservoir SK5614 (**55**) 25.iii.2005 — MPS; Coynachie NJ4733 (**93**) tenanted mines on *Betula* 1.vi.2005; Kinloch Hills NG7316 (**104**) tenanted mines on *Betula* 24.v.2005 — DW

9 *E. sparrmannella* (Bosc) — Cilcain Mold SJ1765 (**51**) 30.iv.2005, det. JRL from photograph — DC

10 *E. salopiella* (Staint.) — Minsmere RSPB TM4767 (**25**) tenanted mines on *Betula pendula* 26.v.2005 — R.M. Harvey & JBH

11 *E. cicatricella* (Zett.) — Swithland Reservoir SK5614 (**55**)25.iii.2005, genitalia det. JC — MPS

12 *E. sangii* (Wood) — Ellington Banks MoD SE2773 (**64**) 25.iii.2005, det HEB — CHF, J.C. Warwick & S.P. Worwood; Kinloch Hills NG7015 (**104**) tenanted mines on *Betula* 24.v.2005 — DW

NEPTICULIDAE

19 *Bohemannia quadrimaculella* (Boh.) — Pembrey Forest SN3803 (**44**) 3.ix.2005 — JSB

40 *B. pulverosella* (Staint.) — Pitmedden Gardens NJ8828 (**93**) vacated mines on *Malus domestica* 4.ix.2005 — RMP

20 *Ectoedemia decentella* (H.-S.) — Hutton Conyers SE3273 (**65**) 10.vii.2005, genitalia det. HEB — CHF

21 *E. sericopeza* (Zell.) — Upton Country Park SY9992 (**9**) larval workings in seeds of *Acer platanoides* 20.vii.2005 — PHS; Tattingstone TM1337 (**25**) mines in keys of *Acer platanoides* 27.vi.2005 — AWP

22 *E. louisella* (Sirc.) — Rushmere St Andrew TM2043 (**25**) 27.v.2005, genitalia det. — JBH

23 *E. argyropeza* (Zell.) — Auchnacraig NM7330 (**103**) tenanted mines on *Populus tremula* 18.x.2005 — DW

25 *E. intimella* (Zell.) — Bach Howey SSSI SO1042 (**43**) tenanted mines in green islands in fallen leaves of *Salix caprea* 17.x.2005 — JRL; Hutton Conyers SE3273 (**65**) tenanted mines on *Salix caprea* 1.xii.2005, det. HEB — CHF

28 *E. angulifasciella* (Staint.) — Creigiau Rhiwledyn NR SH8182 (**49**) mines 16.ix.2005 — S.J. Thomas *per* JT; Alva Glen NS8898 (**87**) vacated mines on *Rosa canina* 15.x.2005 — KPB

30 *E. arcuatella* (H.-S.) — Cressbrook Dale SK1774 (**57**) vacated mines on *Fragaria vesca* 4.ix.2005 — SHH

34 *E. occultella* (Linn.) — by Fishnish NM6641 (**103**) tenanted mines on *Betula* sp. 17.x.2005 — DW

35 *E. minimella* (Zett.) — by Fishnish NM6641 (**103**) tenanted mines on *Betula* sp. 17.x.2005 — DW

36 *E. quinquella* (Bedell) — Dodnor SZ5091 (**10**) mines on *Quercus robur* 13.x.2005 — DGG & S.A. Clarke

36a *E. heringella* (Mariani) — Greenwich TQ3777 (**16**) vacated mines on *Quercus ilex* 1.iv.2005 — RMP; Great Horkesley TL966315 (**19**) tenanted mines on *Quercus ilex* 29.iii.2005; Great Wenham TM0638 (**25**) tenanted mines 28.iii.2005; Higham TM0235 (**26**) tenanted mines 29.iii.2005 — AWP

37 *E. albifasciella* (Hein.) — Strath Gartney NN4710 (**87**) tenanted mines on *Quercus* sp. 13.ix.2005; Doire Dorch NM6342 (**103**) tenanted mines on *Quercus* sp. 17.x.2005 — DW

38 *E. subbimaculella* (Haw.) — Bach Howey SSSI SO1042 (**43**) tenanted mines in green islands in fallen leaves of *Quercus robur* and *Q. petraea* 17.x.2005 — JRL; Teifi Marshes NR SN1824 (**45**) vacated mine on *Quercus* sp. 29.x.2005, det. NRL — RE

39 *E. heringi* (Toll) — Dodnor SZ5091 (**10**) mines on *Quercus robur* 14.x.2005 — DGG & S.A. Clarke

41 *E. atrifrontella* (Staint.) — Binsted Wood SU9906 (**13**) mines in bark of oak sapling 30.iii.2005 — JRL & SJP

42 *E. septembrella* (Staint.) — Teifi Marshes NR SN1824 (**45**) mine on *Hypericum* sp. 29.x.2005, det. NRL — RE; Alva Glen NS8897 (**87**) tenanted mines on *Hypericum pulchrum* 15.x.2005 — KPB

48 *Trifurcula cryptella* (Staint.) — Bala Lake SH9235 (**48**) tenanted mine on *Lotus pedunculatus* 3.viii.2005 — JEG

50 *Stigmella aurella* (Fabr.) — by Fishnish NM6641 (**103**) tenanted mines on *Rubus* sp. 17.x.2005 — DW

55 *S. aeneofasciella* (H.-S.) — Snows Farm SO8908 (**33**) tenanted mine on *Agrimonia* 9.x.2005 — G.H.J. Meredith *per* RGG; Loch Arklet NN3908 (**86**) tenanted mines on *Potentilla erecta* 28.ix.2005; Loch Katrine NN4607 (**87**) tenanted mines on *Potentilla erecta* 7.ix.2005; Glen Nant NN0127 (**98**) tenanted mines on *Potentilla erecta* 16.ix.2005; near Tenga NM5045 (**103**) tenanted mines on *Potentilla erecta* 18.x.2005 — DW

59 *S. poterii* (Staint.) — Berwyns SJ0734 (**48**) tenanted and vacated mines on *Rubus chamaemorus* 8.viii.2005 — ANG & JEG; Cressbrook Dale SK1774 (**57**) tenanted mine on *Sanguisorba minor* 4.ix.2005 — SHH

63 *S. lemniscella* (Zell.) — South Aberdeen City NJ9203 (**91**) mines on *Ulmus glabra* 27.ix.2005 — B.J. Stewart *per* RMP; Torr Damh NM3945 (**103**) vacated mines on *Ulmus glabra* 20.x.2005 — DW

64 *S. continuella* (Staint.) — by Fishnish NM6641 (**103**) vacated mine on *Betula* sp. 17.x.2005 — DW

65 *S. speciosa* (Frey) — Blaisdon Wood SO6917 (**34**) tenanted mine on *Acer pseudoplatanus* 20.viii.2005 — RGG

72 *S. myrtillella* (Staint.) — Leacan Dubha NM6829 (**103**) vacated mines on *Vaccinium myrtillus* 19.x.2005 — DW

75 *S. floslactella* (Haw.) — Doire Dorch NM6342 and Salen NM5743 (**103**) tenanted mines on *Corylus avellana* 17.x.2005 — DW

77 *S. tityrella* (Staint.) — Salen NM5743 (**103**) vacated mines on *Fagus sylvatica* 17.x.2005 — DW

79 *S. perpygmaeella* (Doubl.) — Auchnacraig NM7330 (**103**) vacated mines on *Crataegus monogyna* 18.x.2005 — DW

80 *S. ulmivora* (Fol.) — Bach Howey SSSI SO1042 (**43**) vacated mines on *Ulmus glabra* 13.ix.2005 — JRL

81 *S. hemargyrella* (Kollar) — Salen NM5743 (**103**) tenanted mines on *Fagus sylvatica* 17.x.2005 — DW

82 *S. paradoxa* (Frey) — 1km SW of Llandeilo Graban SO0844 (**43**) several vacated mines on *Crataegus monogyna* 1.viii.2005, first confirmed county record — JRL

84 *S. ruficapitella* (Haw.) — Ard Airigh NM746618 (**97**) tenanted mines on *Quercus* 17.x.2004, moths bred; Camas nam Mult NG7014 (**104**) tenanted mines on *Quercus* 14.x.2004, moths bred — DW

86 *S. roborella* (Johan.) — Coirechoille, Spean NN2481 (**97**) tenanted mines on *Quercus* 8.x.2004, moths bred, genitalia det. — DW

88 *S. samiatella* (Zell.) — Thorp Perrow Arboretum SE2585 (**65**) mine on *Quercus* sp. 4.x.2004, moth bred, genitalia det. HEB — CHF

90 *S. tiliae* (Frey) — Lode TL5362 (**29**) mines on *Tilia platyphyllos* 27.xi.2005 — G. Dennis & J. Childs *per* JRD; West Tanfield SE2476 (**65**) tenanted mines on *Tilia* sp. 10.ix.2005, det HEB — CHF

100 *S. oxyacanthella* (Staint.) — Teifi Marshes NR SN1824 (**45**) vacated mines on *Crataegus* and *Malus* 29.x.2005, det. NRL — RE; Auchnacraig NM7330 (**103**) recently vacated mines on *Crataegus monogyna* 18.x.2005 — DW

110 *S. betulicola* (Staint.) — Loch Katrine NN4208 (**87**) tenanted mines on *Betula* sp. 29.ix.2005; by Fishnish NM6641 (**103**) tenanted mines on *Betula* sp. 17.x.2005; Berriedale ND0823 (**109**) tenanted mines on *Betula* sp. 23.x.2005 — DW

111 *S. microtheriella* (Staint.) — Doire Dorch NM6342 and Salen NM5743 (**103**) tenanted mines on *Corylus avellana* 17.x.2005 — DW

113 *S. sakhalinella* Pupl. — 1km. SW of Llandeilo Graban SO0844 (**43**) vacated mine on *Betula* 1.viii.2005 — JRL; Coed y Garth, nr Arthog SH6617 (**48**) vacated mines on *Betula* sp. 5.viii.2005 — ANG & JEG

114 *S. glutinosae* (Staint.) — Strath Gartney NN4710 (**87**) tenanted mines on *Alnus glutinosa*; Achnadrich NM4552 (**103**) tenanted mines on *Alnus glutinosa* 18.x.2005 — DW

117 *S. confusella* (Wood) — Allt Volagir, S. Uist NF7929 (**110**) vacated mines on *Betula* sp. 30.vii.2005 — KPB

OPOSTEGIDAE

122 *Opostega spatulella* H. – S. — Writtle College TL6706 (19) in RIS trap 25.v.2005, genitalia det. BG, first British record since 1877 — BG, *Ent. Rec.* **117**: 149

TISCHERIIDAE

123 *Tischeria ekebladella* (Bjerk.) — Leacan Dubha NM6829 (**103**) mines on *Quercus* 19.x.2005 — DW

124 *T. dodonaea* Staint. — Teifi Marshes NR SN1824 (**45**) mine on *Quercus* sp. 29.x.2005, det. NRL — RE

125 *Emmetia marginea* (Haw.) — Mersehead NX9256 (**73**) 22.vii.2005, det. KPB — K. Naylor *per* NG

INCURVARIIDAE

128 *Phylloporia bistrigella* (Haw.) — Llaniestyn Common SH5879 (**52**) 14.v.2004 — S.J. Thomas *per* JH; Reidside Moss NJ6056 (**94**) 19.vi.2005 — MRY

129 *Incurvaria pectinea* Haw. — Torrs Warren NX1456 (**74**) larval cut-outs on *Betula* 26.vi.2005 — SEM; Kinloch Hills NG7015 (**104**) larval cut-outs on *Betula* 24.5.2005 — DW

PRODOXIDAE

135 *Lampronia luzella* (Hübn.) — Sane Copse SP8554 (**32**) 31.v.2005 — G.E. Higgs *per* DVM

ADELIDAE

144 *Nemophora fasciella* (Fabr.) — Knocking Hoe TL1333 (**30**) 10.vi.2005 — A. & M. Banthorpe *per* DVM

145 *N. minimella* ([D. & S.]) — Barton Hills TL0830 (**30**) 31.vii.2005 — J.E. Childs *per* DVM; nr Carn Wen SN1628 (**44**) 27.vii.2005 — SDSB *per* JSB

150 *Adela reaumurella* (Linn.) — Yetston NS3970 (**76**) 21.v.2005 — NG

151 *A. croesella* (Scop.) — Llangynog quarry SN3315 (**44**) 29.v.2005 — JSB

153 *A. fibulella* ([D. & S.]) — nr Crwbin SN4812 (**44**) 11.vi.2005 — JSB

HELIOZELIDAE

154 *Heliozela sericiella* (Haw.) — Auchnacraig NM7330 (**103**) vacated mines on *Quercus* 18.x.2005 — DW

156 *H. resplendella* (Staint.) — Dowdeswell Wood SO9919 (**33**) vacated mine on *Alnus glutinosa* i.viii.2005 — G.H.J. Meredith *per* RGG; Buxton SK0674 (**57**) vacated mine on *Alnus glutinosa* 2.x.2005 — SHH; High Batts NR, Ripon SE2976 (**65**) vacated mine on *Alnus glutinosa* 19.viii.2005, det. HEB — CHF; Achnadrich NM4552 (**103**) vacated mines on *Alnus glutinosa* 18.x.2005 — DW

157 *H. hammoniella* (Sorh.) – Hutton Conyers SE3273 (**65**) vacated mine on *Betula pubescens* 21.ix.2005, det. HEB — CHF

PSYCHIDAE

175 *Narycia duplicella* (Goeze) (=*monilifera* Geoff.) — Skipwith Common SE6637 (**61**) cases 27.iii.2004; York SE6250 (**64**) cases 23.iv.2004 — EDC

176 *Dahlica triquetrella* (Hübn.) — Portsmouth SU6703 (**11**) cases on tree trunks 14.x.2005 — IRT & JRL; Swithland Reservoir SK5614 (**55**) case 22.iv.2005, moth bred — K. Tailby *per* MPS

179 *D. lichenella* (Linn.) — Swithland Reservoir SK5614 (**55**) case + female imago 16.iv.2005 — K. Tailby *per* MPS

182 *Bankesia conspurcatella* (Zell.) (= *douglasii* auctt.) — Cardiff ST1678 (**41**) 18.i.2005 — DJS, **New to Wales**

185 *Luffia ferchaultella* (Steph.) — Crackley Wood, Kenilworth SP2874 (**38**) case 10.iv.2005 — NJS; Crickhowell SO2118 (**42**) cases 6.iv.2005 — JRL; Llanelli SS5498 (**44**) cases on *Crataegus* 18.v.2005 — B. Stewart *per* JSB; Heslington SE6250 (**61**) cases 8.iv 2005 — EDC

186 *Psyche casta* (Pall.) — Pembrey Forest SN30 (**44**) 11.vi.2005 — JSB; Colsterdale (Steel House Gill) SE0979 (**65**) old larval case 9.vii.2005, det. HEB — CHF; Garheugh Point NX2650 (**74**) cases on rocks 26.vi.2005 — SEM

191 *Acanthopsyche atra* (Linn.) — Trawscoed SH8234 (**48**) case on *Calluna* 30.iii.2005, female moth bred; Berwyn SJ1137 (**50**) empty case on *Erica cinerea* 15.vii.2005 — ANG & JEG

TINEIDAE

199 *Psychoides verhuella* Bruand — Telpyn SN1707 (**44**) 26.vi.2005 — SDSB *per* JSB

200 *P. filicivora* (Meyr.) — Barn Elms TQ2377 (**17**) 27.iv.2005 — MRH

218 *Nemapogon variatella* (P. & M.) — Greenwich TQ3877 (16) 17.v.2004, genitalia det., first vice-county record for over 60 years — THF

219 *N. ruricolella* (Staint.) — Laugharne SN3009 (**44**) 26.vi.2005, genitalia det. SDSB — JSB & SDSB

220 *N. clematella* (Fabr.) — Wood of Cree NX3870 & 3771 (**73**) larvae in *Hypoxylon fuscum* on dead *Corylus* 25.vi.2005, moths bred — SEM

227 *Monopis laevigella* ([D. & S.]) — Balmaclellan NX6478 (**73**) 8.vi.2005 — IRT

230 *M. crocicapitella* (Clem.) — Earith, Vermuyden TL3975 (**31**) 9.vi.2005, genitalia det. —D. Griffiths *per* BD; Lightfoot Green SD5133 (**60**) 28.vi.2005 — SMP

231 *M. imella* (Hübn.) — Grain TQ8876 (**16**) 26.v.2005 — A.G.J. Butcher *per* DJLA

232 *M. monachella* (Hübn.) — Dovercourt TM2230 (**19**) 1.ix.2005 – C. Gibson *per* BG

233 *M. fenestratella* (Heyd.) — Holland Park TQ2479 (**21**) 20.vi.2005 — THF

238 *Niditinea striolella* (Mats.) — The Gorse TL2461 (**31**) 21.vi 2005, genitalia det. — BD

240 *Tinea pellionella* Linn. — Johnstown SN3919 (**44**) 29.vi.2005, genitalia det. — JSB

243 *T. dubiella* Staint. — Bryn Gwernydd, nr Harlech SH5931 (**48**) indoors 6.ix.2005, genitalia det. G.S. Robinson from photograph — H. Bantock *per* ANG

BUCCULATRICIDAE

265 *Bucculatrix cristatella* Zell. — Asterley Rocks SJ2621 (**47**) larval feeding signs and moulting-cocoon on *Achillea millefolium* 1.v.2005 — B. Smart *per* IFS; Leesowe embankment SJ2792 (**58**) larval feeding signs and moulting-cocoon on *Achillea millefolium* 9.v.2005 — IFS

267 *B. maritima* Staint. — Auchencairn NX8051 (**73**) 2005, genitalia det. KPB — E.A.M. MacAlpine *per* KPB

272 *B. cidarella* Zell. — Bishop Monkton SE3465 (**64**) tenanted mines on *Alnus glutinosa* 22.ix.2005, det. HEB — D.J. & D.M. Bowes *per* CHF

273 *B. thoracella* (Thunb.) — Sharow, Ripon SE3271 (**64**) 21.vii.2005, det. HEB — J.C. Warwick *per* CHF

274 *B. ulmella* Zell. — Teifi Marshes NR SN1824 (**45**) 29.x.2005, det. NRL — RE; Strath Gartney NN4110 (**87**) vacated mines on *Quercus* 30.ix.2005; Leacan Dubha NM6829 (**103**) vacated mines on *Quercus* 19.x.2005 — DW

276 *B. demaryella* (Dup.) — Glen Aros NM5245 (**103**) vacated mines on *Betula* 18.x.2005 — DW

DOUGLASIIDAE

399 *Tinagma balteolella* (F. v. R.) — Darenth TQ5672 (**16**) 24.v.2005 — DJLA

ROESLERSTAMMIIDAE

447 *Roeslerstammia erxlebella* ([D. & S.]) — Coombe Meadow SS4902 (**4**) 6.v.2005 — R. Wolton *per* RJH

GRACILLARIIDAE

282 *Caloptilia elongella* (Linn.) — Barnland T1463 (**H12**) 16.x.2005, genitalia det. K.G.M. Bond — MO'D

283 *Caloptilia betulicola* (Hering) — Torrs Warren NX1456 (**74**) tenanted larval spinning on *Betula* 26.vi.2005 — SEM; Barnland T1463 (**H12**) 16.x.2005, genitalia det. K.G.M. Bond — MO'D

284 *C. rufipennella* (Hübn.) — Northam SS4529 (**4**) 10.iv.2004 — S. Hatch *per* RJH; Bach Howey SSSI SO1042 (**43**) larval spinnings on *Acer pseudoplatanus* 13.ix.2005 — JRL; Kilmacolm NS3670 (**76**) 2.v.2005 — NG; by Fishnish NM6641 (**103**) vacated spinnings on *Acer pseudoplatanus* 17.x.2005 — DW; Belfast J3371 (**H39**) 17.vii.2003, genitalia det. — JBH, **New to Ireland**

285 *C. azaleella* (Brants) — Lisburn J2761 (**H38**) spinnings on *Azalea* cultivar 26.iii.2005 — JBH

287 *C. robustella* Jäckh — Harborne Reservoir SP0383 (**39**) 8.viii.2004 — A. Prior & D. Grundy *per* DE

288 *C. stigmatella* (Fabr.) — Torrs Warren NX1555 (**74**) larval spinning on *Salix repens* 26.vi.2005, moth bred — SEM

289 *C. falconipennella* (Hübn.) — Minsmere RSPB NR TM4766 (**25**) vacated larval spinnings on *Alnus glutinosa* 1.x.2005 — JBH, JRL & R.M. Harvey

295 *C. hauderi* (Rebel) — Basingstoke SU6153 (**12**) 13.vii.2005, genitalia det. JRL — MJW

296 *Calybites phasianipennella* (Hübn.) — Golan SH5142 (**49**) 11 &12.vii.2005 — HEB; Bishop Monkton SE3465 (**64**) 21.viii.2005, det. HEB — D.J. & D.M. Bowes *per* CHF

301 *Parornix betulae* (Staint.) — Wood of Cree NX3870 & 3672 (**73**) 25.vi.2005 — SEM

302 *P. fagivora* (Frey) — Pen Wood SO8202 (**34**) larval spinning on *Fagus* 8.x.2005 — G.H.J. Meredith *per* RGG

303 *P. anglicella* (Staint.) — Tobermory NM4955 and NM5055 and Auchnacraig NM7330 (**103**) vacated cones on *Crataegus monogyna* 18.x.2005 — DW

305 *P. scoticella* (Staint.) — Teifi Marshes NR SN1824 (**45**) vacated mine on *Sorbus aucuparia* 29.x.2005, det. NRL — RE; Wood of Cree NX3870 (**73**) 25.vi.2005 — SEM; Allt Volagir, S. Uist NF7929 (**110**) larval workings on *Sorbus aucuparia* 30.vii.2005 — KPB; Aughanlig (**H37**) 30.vii.2005, genitalia det. BE — K. Murphy *per* BE

313 *Acrocercops brongniardella* (Fabr.) — Truro SW826449 (**1**) vacated mines on *Quercus ilex* 1.xi.2005 — WGT

323 *Phyllonorycter oxyacanthae* (Frey) — Tobermory NM4955 and NM5055 (**103**) mines on *Crataegus monogyna* 18.x.2005 — DW

324 *P. sorbi* (Frey) — Doire Dorch NM6342 (**103**) mines on *Sorbus aucuparia* 17.x.2005 — DW

325 *P. mespilella* (Hübn.) — Nant Porth SH5672 (**49**) mines on *Sorbus aria* 19.vii.2004, moths bred, det. M. Hull — M.J. Hammett *per* JT

329 *P. spinicolella* (Zell.) — Tobermory NM4955 (**103**) mines on *Prunus spinosa* 18.x.2005 — DW

332a *P. leucographella* (Zell.) — Yetston NS3970 (**76**) mines on *Sorbus aucuparia* 8.viii.2005; Anniesland NS5468 (**77**) mines on *Pyracantha* 4.ii.2005; Stirling NS7992 (**86**) mines on *Pyracantha* 24.1.2005 — NG; Dublin O1634 (**H21**) mines on *Pyracantha coccinea* 28.1.2005 — KGMB, **New to Ireland**, *Ent. Gaz.* **56**: 80

336 *P. dubitella* (H. – S.) — Stubhampton Bottom ST9015 (**9**) mines on *Salix caprea* 4.xi.2005, moths bred — PHS; Talybont Reservoir SO1019 (**42**) 20.v.2005 — JRL

337 *P. hilarella* (Zett.) — Bach Howey SSSI SO1042 (**43**) mines on *Salix caprea* 17.x.2005, moths bred — JRL; Barnland T1463 (**H12**) 20.vii.2005 — MO'D

339 *P. ulicicolella* (Staint.) — N. of Leckhampton SO9519 (**33**) 22.vi.2005 — G.H.J. Meredith *per* RGG

340 *P. scopariella* (Zell.) — Mynydd Garn-goch SS6197 (**41**) 17.v.2005 — B. Stewart *per* DJS

341 *P. maestingella* (Müller) — Salen NM5743 (**103**) mines on *Fagus sylvatica* 17.x.2005 — DW

342 *P. coryli* (Nic.) — Wood of Cree NX3870, 3771 & 3672 (**73**) mines on *Corylus* 25.vi.2005 — SEM; Doire Dorch NM6342 (**103**) mines on *Corylus avellana* 17.x.2005 — DW

344 *P. strigulatella* (L. & Z.) — Charlton Park SO9520 (**33**) mine on *Alnus incana* 6.xi.2005, moth bred — G.H.J. Meredith *per* RGG

345 *P. rajella* (Linn.) — Salen NM5743 (**103**) mines on *Alnus glutinosa* 17.x.2005 — DW

347 *P. anderidae* (Fletch.) — Loch Arklet NN3908 (**86**) mines on *Betula* sp. 28.ix.2005, moths bred — DW

353 *P. ulmifoliella* (Hübn.) — by Fishnish NM6641 (**103**) mines on *Betula* sp. 17.x.2005 — DW

357 *P. stettinensis* (Nic.) — Catterick SE2498 (**65**) mines on *Alnus glutinosa* 10.xi.2005 — CHF

358 *P. froelichiella* (Zell.) — Dowdeswell Wood SO9919 (**33**) 28.vi.2005 — G.H.J. Meredith *per* RGG; Achnadrich NM4552 (**103**) mines on *Alnus glutinosa* 18.x.2005 — DW

359 *P. nicellii* (Staint.) — Doire Dorch NM6342 and Salen NM5743 (**103**) mines on *Corylus avellana* 17.x.2005 — DW

360 *P kleemannella* (Fabr.) — Strath Gartney NN4110 (**87**) mines on *Alnus glutinosa*; Achnadrich NM4552 (**103**) mines on *Alnus glutinosa* 18.x.2005 — DW

364 *P. geniculella* (Rag.) — Craigellachie NJ2844 (**94**) mines on *Acer pseudoplatanus* 6.viii.05 — RMP

365 *P. comparella* (Dup.) — Jaywick TM1312 (**19**) mines on *Populus alba* 3.x.2005 — J. Young per BG

366a *Cameraria ohridella* Deschka & Dimic — Dillington House ST3615 (**5**) mines on *Aesculus hippocastanum* 12.x.2005 — RJH; Lode TL5362 (**29**) mines 27.xi.2005 — G. Dennis & J.E. Childs *per* JRD; Milton Ernest TL0052 (**30**) tenanted mines 7.viii.2005 — J.E. Childs per DVM; Great Gransden, TL2655 (**31**) 21.viii.2005 — J.E Childs *per* BD; Castle Ashby SP8760 (**32**) tenanted mines 11.viii.2005 — DVM; Hazel Wood ST8699 (**34**) mines 24.ix.2005 — G.H.J. Meredith *per* RGG; Edith Weston SK9205 (**55**) mines 30.ix.2005 — V. Arnold *per* MPS; Pulford SJ3859 (**58**) mines 14.ix.2005 — T. Hollingworth *per* DVM

368 *Phyllocnistis unipunctella* (Steph.) — Nant Porth SH5672 (**49**) mines on *Populus* sp. 24.vi.2004 — JT

CHOREUTIDAE

386 *Tebenna micalis* (Mann) — Hambledon SU9737 (**17**) 22.vii.2005 — JP

387 *Prochoreutis sehestediana* (Fabr.) — Caeau ffos Fach SN5712 (**44**) 7.vi.2005, genitalia det. DJS — M. White *per* JSB

388 *P. myllerana* (Fabr.) — Dundas Loch NT1275 (**84**) 21.viii.2005, genitalia det. — KPB

389 *Choreutis pariana* (Clerck) — Chorlton SJ8192 (**59**) larva on *Malus sylvestris* 30.vii.2005 — B. Smart *per* SMP; Ripon SE3170 (**64**) 7.x.2005, det HEB — D.J. & D.M. Bowes *per* CHF

GLYPHIPTERIGIDAE

391 *Glyphipterix simpliciella* (Steph.) — Deele H2799 (**H34**) 30.v.2005, det. AT from photograph — SD

394 *G. forsterella* (Fabr.) — Poundgate TQ4828 (**14**) 21.vi.2005 — GAC; Glen Finglas NN5212 (**87**) 21.vi.2005 — DW; Epping Forest TQ4399 (**18**) 8.vi.2005 — DP

395 *G. haworthana* (Steph.) — Cors Llwyn-teg SN5507 (**44**) 27.v.2005 — I.K. Morgan *per* JSB

397 *G. thrasonella* (Scop.) — Mongorrey, Raphoe C2305 (**H34**) 11.vi.2005, det. AT — SDSMP — R. Banks *per* SMP

YPONOMEUTIDAE

403 *Argyresthia glabratella* (Zell.) — Bold Moss, St Helens SJ5494 (**59**) 7.vi.2005, genitalia det. RMP — R. Banks *per* SMP

409a *A. trifasciata* Staud. — Staplegrove ST2126 (**5**) 2.vi.2005 — JAMcG; Hedge End SU4914 (**11**) 21.v.2005 — D. Hamilton *per* IRT; Marley Common SU8831 (**13**) 26.v.2005 — AMD; Ripon SE3170 (**64**) 17.vi.2005, det HEB — D.J. & D.M. Bowes *per* CHF; Dunfermline NT1185 (**85**) 3.vi.2005 — DD

409b *A. cupressella* Wals. — Kingsdown TR3748 (**15**) 21.vi.2005 — S.P. Clancy *per* DJLA

411 *A. goedartella* (Linn.) — Tresta HU3551 (**112**) 6.viii.2005 — JC; Hillsborough J2457 (**H38**) 29.viii.2005 — JBH

412 *A. pygmaeella* ([D. & S.]) — Barnland T1463 (**H12**) 17.vi.2005 — MO'D

415 *A. retinella* Zell. — Barnland T1463 (**H12**) 23.vi.2005 — MO'D

418 *A. conjugella* Zell. — Barnland T1463 (**H12**) 26.v.2005 — MO'D

420 *A. pruniella* (Cl.) — Barnland T1463 (**H12**) 9.vii.2005 — MO'D

422 *A. albistria* (Haw.) — Inchmarlo NO6796 (**91**) 4.viii.2003 — C.W.N. Holmes *per* RMP

424 *Yponomeuta evonymella* (Linn.) — Kilmacolm NS3670 (**76**) 26.vii.2005 — NG

427 *Y. cagnagella* (Hübn.) — Carrifran, Moffat Hills NT1512 (**72**) 30.vii.2003, det. KPB — JW & P. Ashmole

428 *Y. rorrella* (Hübn.) — Penclacwydd SS59 (**44**) 29.vi.2005 — B. Stewart *per* JSB; Werngwyddel SN0939 (**45**) 29.vii.2005 — L & P. Rapley *per* MSP

431 *Y. sedella* Treits. — Ledbury SO7236 (**36**) 11.viii.2005 — MWH

435 *Zelleria hepariella* Staint. — Sharpthorne TQ3732 (**14**) 23.iii.2005 — PCla; Carsegowan Moss NX4259 (**74**) 26.vi.2005 — KPB

437 *Swammerdamia caesiella* (Hübn.) — near Tenga NM5045 (**103**) larval web on Betula 18.x.2005 — DW; Barnland T1463 (**H12**) 29.v.2005 — MO'D

445 *Ocnerostoma friesei* Svens. — Rushmere St Andrew TM2043 (**25**) 25.v.2005, genitalia det. — JBH; NW of Rhycymerau SN5739 (**44**) 27.iii.2005 — J. Wormald *per* JSB; Ellington Banks MoD SE2773 (**64**) 25.iii.2005, det. HEB — CHF, J.C. Warwick & S.P. Worwood

451 *Ypsolopha mucronella* (Scop.) — Braunton Burrows SS4633 (**4**) 27.iii.2004 — S. Hatch *per* RJH

453 *Y. dentella* (Fabr.) — Tresta, west Mainland (**112**) 8.viii.2003 — MGP; Barnland T1463 (**H12**) 8.viii.2005 — MO'D

457 *Y. lucella* (Fabr.) — Higher Nichols Nymett SS6902 (**4**) 11.viii.2005 —S. D. Beavan *per* RJH

458 *Y. alpella* ([D. & S.]) — Morfa Conwy SH7678 (**49**) 10.viii.2004 — JT

460 *Y. parenthesella* (Linn.) — Kelhead NY1469 (**72**) 5.viii.2005 — K. Naylor *per* NG

462 *Y. sequella* (Cl.) — Mugdock CP NS5477 (**86**) 3.x.2005, J. Knowler *per* NG

465 *Plutella porrectella* (Linn.) — Wood of Cree NX3870 (**73**) 25.vi.2005 — SEM

468 *Rhigognostis incarnatella* (Steud.) — Meall nan Tarmachan NN5939 (88) larva on *Draba incana* 24.v.2005, moth bred, previously unrecorded foodplant — KPB, *Ent. Rec.* **118**: 11; Barnland T1463 (**H12**) 19.iii.2005 — MO'D

469 *Eidophasia messingiella* (F.v R.) — Eynesbury TL1858 (**31**) 23.vi. 2005, genitalia det. — BD

471 *Digitivalva perlepidella* (Staint.) — Oxted TQ3853 (**17**) 3.vi.2005 — JP

472 *D. pulicariae* (Klim.) — Barnland T1463 (**H12**) 8.viii.2005 — MO'D

473 *Acrolepiopsis assectella* (Zell.) — Chippenham ST9073 (**7**) pupa on *Allium* cultivar 16.ix.2005, moth bred — M. Sammes *per* EGS & MHS; Bullen Hill ST8957 (**8**) pupa on *Allium* cultivar 11.ix.2005, moth bred — EGS & MHS

476 *Acrolepia autumnitella* Curt. — Penclacwydd SS5398 (**44**) 27.x.2005 — B. Stewart *per* JSB

LYONETIIDAE

260 *Leucoptera malifoliella* (Costa) — Pemberton SN5200 (**44**) mine on *Crataegus monogyna* 31.vii.2005 — B. Stewart *per* JSB

264 *Bedellia somnulentella* (Zell.) — Llangorse SO1327 (**42**) larvae on *Calystegia* 18.x.2005 — NRL & JRL

COLEOPHORIDAE

494 *Coleophora coracipennella* (Hübn.) — Datchworth TL2719 (**20**) case on *Prunus spinosa* 24.v.2005, moth bred, genitalia det. — SMP

499 *C. limosipennella* (Dup.) — Parkhurst Forest SZ4690 (**10**) case on *Ulmus minor* 7.vi.2005 — DTB

502 *C. trigeminella* (Fuchs) — Clifton Backies, York SE5954 (**62**) 2.vii.2005, genitalia det. HEB — J.C. Warwick, J. Atha & EDC *per* CHF

504 *C. lusciniaepennella* (Treits.) — Knock Hill NJ5455 (**94**) cases on *Myrica gale* 24.ix.2005 — MRY

506 *C. vitisella* Gregs. — Greendams NO6589 (**91**) case on *Vaccinium vitis-idaea* 13.v.2005 — RMP & C.W.N. Holmes; Migdale Wood NH6591 (**107**) cases on *Vaccinium vitis-idaea* 14.v.2005 — DW

507 *C. glitzella* Hofmann — Ravens Rock Forest Gorge NC4901 (**107**) cases on *Vaccinium vitis-idaea* 15.iv.2005 — DW

510 *C. juncicolella* Staint. — Greendams NO6589 (**91**) cases swept from *Calluna* 13.v.2005 — RMP; Bearn a' Chlaidheimh NH7377 (**106**) cases on *Calluna vulgaris* and *Erica cinerea* 4.v.2005; Inveran NH5797 (**107**) cases on *Calluna vulgaris* 22.v.2005 — DW

511 *C. orbitella* Zell. — Peatlands (**H37**) 14.vii.2002, genitalia det. BE & JRL — K. Murphy *per* BE

515 *C. albitarsella* Zell. — Asterley Rocks SJ2521 (**47**) cases on *Origanum* 1.v.2005 — IFS *et al.*; Alva Glen NS8898 (**87**) cases on *Origanum* 15.x.2005 — KPB

517a *C. frischella* (Linn.) — St Peters, Guernsey WV2578 (**113**) 8.viii.2005, genitalia det. PHS — PDMC

519 *C. deauratella* L. & Z. — Kate's Bridge TF1015 (**53**) 1.vii.2005 — RWG; Higher Poynton SJ9484 (**58**) six on 1.vii.2005, genitalia det. SHH — M. Dale, K. McCabe & SHH

520 *C. fuscicornis* Zell. — Portsdown SU6006 (**11**) 22.vi.2005, genitalia det. — RJD

521 *C. conyzae* Zell. — Lynford TL8190 (**28**) 16.vii.2005, genitalia det., conf. JC — RWG

524 *C. lithargyrinella* Zell. — Tiger Hill TL9235 (**26**) case on *Stellaria holostea* 16.iv.2005 — AWP; Wood of Cree NX3871 (**73**) cases near *Stellaria holostea* 25.vi.2005, moths bred (KPB) — SEM

535 *C. ibipennella* Zell — Marbury CP SJ6576 (**58**) 9.vii.2005, genitalia det. JC & BG — M. Dale *per* SHH; Ellington Banks MoD SE2773 (**64**) 13.vii.2005, genitalia det. HEB — CHF, J.C. Warwick & S.P. Worwood

537 *C. kuehnella* (Goeze) — Ilton ST3418 (**5**) case on *Quercus robur* 15.v.2005 — JAMcG

541 *C. pyrrhulipennella* Zell. — near Cornhill NJ55 (**94**) 4.vi.2005 — R. Leverton *per* MRY; Bearn a' Chlaidheimh NH7377 (**106**) cases on *Calluna vulgaris* and *Erica cinerea* 4.v.2005; Inveran NH5797 (**107**) cases on *Calluna vulgaris* 22.v.2005 — DW; Castleward (**H38**) 16.vi.2002, det. BE — K. Murphy *per* BE

544 *C. albicosta* (Haw.) — Barnland T1463 (**H12**) 29.v.2005 — MO'D

545 *C. saturatella* Staint. — Lount NR SK3918 (**55**) 1.viii.2005, det. M.F.V. Corley from photograph — G. Finch & K. Tailby *per* MPS

553 *C. striatipennella* Nyl. — Golan SH5142 (**49**) 16.vii.2005, genitalia det. — HEB

561 *C. therinella* Tengst. — – Badbury Rings ST9603 (**9**) 13.vii.2005, genitalia det. PHS — P. Davey *per* PHS; Minsmere RSPB TM4767 (**25**) 28.vii.2005, genitalia det. JBH — R.M. Harvey & JBH

564 *C. virgaureae* Staint. (=*obscenella* H.-S.) — Pembrey Forest SN3803 (**44**) 3.ix.2005, genitalia det. — JSB

565 *C. saxicolella* (Dup.) — Llangennech Station SN5601 (**44**) 3.viii.2005, genitalia det. — JSB; Staoinebrig NF7334 (**110**) 13.vii.1998, genitalia det. — AMD

568 *C. versurella* Zell. — Preston SD3822 (**59**) 16.viii.2005, genitalia det. SMP — A. Barker *per* SMP

569 *C. squamosella* Staint. — Harpenden TL1313 (**20**) 10.viii.2002, genitalia det. B. Goodey — RIS trap *per* CWP

573 *C. atriplicis* Meyr. — Mochras SH5626 (**48**) 29.vii.2005, genitalia det. — ANG & JEG

577 *C. artemisicolella* Bruand — Llanelli SS5399 (**44**) case on *Artemisia vulgaris* 26.viii.2005 — B. Stewart *per* JSB

552 *C. lassella* Staud. — Writtle College TL6706 (**19**) three in RIS trap 25.v.2005, genitalia det.. — BG

581 *C. taeniipennella* H.-S. — Cann Wood SO3063 (**43**) 11.vii.2003, genitalia det. JRL — AMD; Buxton SK0674 (**57**) cases on *Juncus articulatus* 2.x.2005 — SHH; Glen Sherup NN9404 (**87**) cases on *Juncus articulatus* 21.ix.2005 — DW

582 *C. glaucicolella* Wood — near Cornhill NJC55 (**94**) 9.vii.2005, genitalia det. MRY — R. Leverton *per* MRY

583 *C. tamesis* Waters — Watermills Wood SJ8148 (**39**) 18.vi.2005, genitalia det. M. Dale — J. Hill, N. Pomiankowscki, J. Bryan & M. Dale *per* DE; Auchencairn NX8051(**73**) 2005, genitalia det. KPB — E.A.M. MacAlpine *per* KPB; Inversnaid NN3409 (**86**) cases on *Juncus articulatus* 29.viii.2005 — DW

587 *C. caespititiella* Zell. — Rushmere St Andrew TM2043 (**25**) 9.vi.2003, genitalia det. — JBH; Talke SJ8254 (**39**) 13.vi.2005, genitalia det. — M. Dale *per* DE

589 *C. salicorniae* Hein. & Wocke — Talybont SH5822 (**48**) 17.vii.2005, genitalia det. ANG — J.J. & J.M. Hicks *per* ANG

ELACHISTIDAE

590 *Perittia obscurepunctella* (Staint.) — Porth Penrhyn SH5972 (**49**) tenanted mines on *Symphoricarpos* 1.vii.2005, previously unrecorded foodplant — JH & S.J. Thomas *per* JT

596 *Elachista poae* Staint. — Ashleworth Ham SO8326 (**34**) 7.viii.2005, genitalia det. MWH — M.J. Bradley *per* RGG

598 *E. kilmunella* (Staint.) — Ben Rinnes NJ2636 (**94**) 9.vii.2005 — R. Leverton *per* MRY

599 *E. alpinella* Staint. — Godstone TQ3551 (**17**) tenanted mines on *Carex* sp. 17.vi.2005, moths bred — GAC; Hindolveston TG0429 (**27**) 5.ix.2005, genitalia det.; Sculthorpe Moor TF9030 (**28**) 8.ix.2005, genitalia det. — JC; West Melton SE4200 (**63**) 22.viii.2005, genitalia det. — HEB

601 *E. albifrontella* (Hübn.) — Wood of Cree NX3870 (**73**) 25.vi.2005 — SEM

613 *E. subocellea* (Steph.) — Monks Wood TL1979 (**31**) 9.vii. 2005, genitalia det. — BD; Ellington Banks MoD SE2773 (**64**) 24.vi.2005, det HEB — CHF, J.C. Warwick & S.P. Worwood

621 *E. subalbidella* Schl. — Balmaclellan NX6478 (**73**) 9.vi.2005, det. JRL — IRT

622 *E. adscitella* Staint — Talybont Reservoir SO1020 & 1019 (**42**) many tenanted mines on *Deschampsia cespitosa*, moths bred — JRL

OECOPHORIDAE

638a *Denisia albimaculea* (Haw.) — Rushmere St Andrew TM2043 (**25**) 16.vi.2005, genitalia det. — JBH; Betty Daw's Wood SO6928 (**34**) 19.vi.2005, det. MWH — M.J. Bradley *per* RGG; Sale SJ7992 (**58**) 30.v.2004, det. JRL from photograph — P.B. Hardy *per* SHH

642 *Batia unitella* (Hübn.) — Higher Nichols Nymett SS6902 (**4**) 20.vii.2005 — S. D. Beavan *per* RJH Strensall Common SE6561 (**62**) 27.vii.2002 — HEB

649 *Esperia sulphurella* (Fabr.) — Taindore NH6851 (**106**) 4.vi.2005 — D. Barbour *per* MRY

652 *Alabonia geoffrella* (Linn.) — Rutland Water SK8806 (**55**) 27.v.2005, det. A.J. Mackay — T. Caldicott *per* MPS

656 *Tachystola acroxantha* (Meyr.) — Northam SS4429 (**4**) indoors 21.x.2004 — S. Hatch *per* RJH; Greenwich Park TQ3976 (**16**) 11.x.2005 —

660 *Pseudatemelia josephinae* (Toll) — Bridge of Canny NO6497 (**91**) 1.vii.2005 — RMP

661 *P. flavifrontella* ([D. & S.]) — Holland Park TQ2479 (**21**) 9.vi.2005, genitalia det. — THF

662 *P. subochreella* (Doubl.) — Betty Daw's Wood SO6928 (**34**) 19.vi.2005, det. MWH — M.J. Bradley *per* RGG

664 *Diurnea lipsiella* ([D. & S.]) — Braunton Burrows SS4535 (**4**) 10.xi.2003 — S. Hatch *per* RJH

667 *Semioscopis steinkellneriana* ([D. & S.]) — Braunton Burrows SS4534 (**4**) 3.v.2002 — S. Hatch *per* RJH

677 *Depressaria douglasella* Staint. — Sevenhampton SU2187 (**7**) 9.ix.2005, genitalia det. MFVC — SN

678 *D. sordidatella* Tengst. — Landguard TM2831 (**25**) 10.viii.2005, genitalia det. JBH — N. Odin *per* JBH

689 *Agonopterix ciliella* (Staint.) — Thirlestane, Ettrick NT2815 (**79**) 15.iv.2004, det. RMP — JW & L. Douglas

692 *A. subpropinquella* (Staint.) — Rosbeg G6797 (**H35**) f. *rhodochrella* 30.viii.2005 — JBH

694 *A. nanatella* (Staint.) — Pembrey Burrows SS4299 (**44**) 25.viii.2005, genitalia det. JSB — S. Jones *per* JSB

697 *A. arenella* (Cl.) — Barnland T1463 (**H12**) 29.v.2005 — MO'D

699 *A. bipunctosa* (Curtis) — Penybryn SN1843 (**45**) 21.viii.2005, det. RE & A.D. Lewis — R. Gill *per* RE

701 *A. ocellana* (Fabr.) — Gordon Moss NT6342 (**81**) 27.iii.2004, det. RMP — JW

709 *A. liturosa* (Haw.) — Barnland T1463 (**H12**) 9.vii.2005 — MO'D

714 *A. yeatiana* (Fabr.) — Auchencairn NX8051 (**73**) 26.iv.2005, det. KPB — E.A.M. MacAlpine *per* KPB

ETHMIIDAE

719 *Ethmia quadrillella* (Goeze) — Lound TG5000 (**25**) 14.vii.2005 — S. Bailey *per* AWP

GELECHIIDAE

725 *Metzneria aestivella* (Zell.) — Texaco Oil Refinery SM9002 (**45**) pupal exuviae on *Carlina* 27.vi.2005 — B. Stewart *per* RE

727a *M. aprilella* (H. –S.) — Pembrey Burrows SS4199 (**44**) 29.vi.2005 — JSB, **New to Wales**

731 *Eulamprotes atrella* ([D. & S.]) — Lacken Wood, Gorey T1363 (**H12**) 9.vii.2005 — MO'D

732 *E. unicolorella* (Dup.) — Pembrey Forest SN3902 (**44**) 21.v.2005 — JSB

735 *Monochroa tenebrella* (Hübn.) — Torrs Warren NX1456 (**74**) 26.vi.2005 — SEM

736 *M. lucidella* (Steph.) — Johnstown SN3919 (**44**) 27.vi.2005 — JSB; Nosterfield NR SE2781 (**65**) 1.vii.2005, det HEB — CHF, J.C. Warwick & S.P. Worwood

740 *M. hornigi* (Staud.) — Hindolveston TG0429 (**27**) 17.vi.2005, genitalia det. — JC

779 *Bryotropha affinis* (Haw.) — Inchmarlo NO6796 (**91**) 17.vii.2005 — C.W.N. Holmes *per* RMP

780 *B. similis* (Staint.) — Invernaver NC6961 (**108**) 1.vii.2005, genitalia det. — RJH

789 *B. domestica* (Haw.) — Auchencairn NX8051 (**73**) 10.viii.2005, det. KPB — E.A.M. MacAlpine *per* KPB; Barnland T1463 (**H12**) 8.viii.2005 — MO'D; Hillsborough J2457 (**H38**) 28.viii.2005 — JBH

755 *Stenolechia gemmella* (Linn.) — Felindre SN1039 (**45**) 3.ix.2005, det. RE — J. Atkinson *per* RE; Bangor SH5671 (**49**) 9.viii.2005 — S.J. Thomas *per* JT

758 *Recurvaria leucatella* (Cl.) — Sharpthorne TQ3732 (**14**) 6.viii.2005 — PCla; Clipsham Quarry SK9815 (**55**) 9.vii.2005, det. MPS — G. Finch & A.P. Russell *per* MPS

760 *Exoteleia dodecella* (Linn.) — near Cornhill NJC55 (**94**) 9.vii.2005 — R. Leverton *per* MRY

762 *Athrips mouffetella* (Linn.) — Telpyn Point SN1807 (**44**) 7.vii.2005 — JSB

773 *Pseudotelphusa paripunctella* (Thunb.) — Achany NC5700 (**107**) vii.2005 — DW

766 *Altenia scriptella* (Hübn.) — Weymouth SY6679 (9) 25.vii.2005, first county record for over 50 years — PHS

774a *Teleiodes flavimaculella* (H. – S.) — Rewell Wood SU9909 (13) two females 19 & 21.vi.2005 — BE

770 *Carpatolechia proximella* (Hübn.) — Barnland T1463 (**H12**) 4.vi.2005 — MO'D

792 *Mirificarma mulinella* (Zell.) — Barnland T1463 (**H12**) 27.vii.2005 — MO'D; Hillsborough J2457 (**H38**) 29.viii.2005, genitalia det. — JBH

796 *Aroga velocella* (Zell.) — Earith, Vermuyden, TL3975 (**31**) 10.vii.2005, genitalia det. BD — D. Griffiths *per* BD

800 *Gelechia rhombella* ([D. & S.]) — Preston Montford SJ4314 (**40**) 23.vii.2005, det. JRL — AMD

804 *G. cuneatella* Dougl. — Halesowen SO9483 (**37**) 27.viii.2005, genitalia det., conf. K. Sattler — PCle, *Ent. Rec.* **118**: 30

815 *Scrobipalpa nitentella* (Fuchs) — Pembrey Burrows SS4299 (**44**) 11.viii.2005, genitalia det. JSB — S. Jones *per* JSB

818 *S. atriplicella* (F.v.R.) — Earith, Vermuyden, TL3975 (**31**) 17.vii.2005, genitalia det. BD — D. Griffiths *per* BD

827 *Caryocolum alsinella* (Zell.) — Pembrey Burrows SS4199 (**44**) 28.vii.2004, genitalia det. — JSB; Morfa Conwy SH7779 (**49**) 9.viii.2004, genitalia det. S.J. Thomas — JH

830 *C. fraternella* (Dougl.) — Waun-y-mynach Common SO9029 (**42**) larvae on *Stellaria holostea* and *Cerastium fontanum* 19.v.2005, moths bred — JRL; Mersehead NX9256 (**73**) 3.viii.2005, det. KPB — K. Naylor *per* NG

835 *C. blandulella* (Tutt) — Pembrey Burrows SS4199 (**44**) 5.viii.2005, genitalia det. — JSB, **New to Wales**

841 *Sophronia semicostella* (Hübn.) — Merthyr SO0603 (**41**) 22.vii.2005, det. DJS — M. Evans & M. Hogan *per* DJS

843 *Aproaerema anthyllidella* (Hübn) — Ellington Banks MoD SE2773 (**64**) 12.viii.2005, det HEB — CHF & S.P. Worwood

847 *Syncopacma taeniolella* (Zell.) — Pembrey Burrows SS4199 (**44**) 9.vii.2005 — JSB; Ellington Banks MoD SE2773 (**64**) 13.vii.2005, det HEB — CHF. J.C. Warwick & S.P. Worwood

849 *S. cinctella* (Cl.) — Chelsea Physic Garden TQ2777 (**21**) 19.vi.2005, genitalia det. — THF; Pembrey Forest SN3902 (**44**) 21.v.2005, genitalia det. JRL — JSB & SDSB, **New to Wales**

851 *Dichomeris alacella* (Zell.) — Micheldever Spoil Heaps NR SU5244 (**12**) 20.vii.2005 — MJW; Knepp Castle TQ1522 (13) 14.vii.2005, genitalia det. , first vice-county record since VCH — THF

853 *Anacampsis populella* (Cl.) — Glen Clova NO3765 (**90**) 27.viii.2005, det. MRY — JW & R. Holme

854 *A. blattariella* (Hübn.) — Eversden Wood TL3453 (**29**) 18.viii.2005, genitalia det. — JRD

855 *Acompsia cinerella* (Cl.) — Holkham Dunes TF8845 (**28**) 7.vii.2005 — MRY

840 *Thiotricha subocellea* (Steph.) — Minsmere RSPB TM4767 (**25**) 19.vii.2005, det. JBH — R.M. Harvey *per* JBH

AUTOSTICHIDAE

870 *Oegoconia quadripuncta* (Haw.) — Canklow, Rotherham SK 4390 (**63**) 19.viii.2005, genitalia det. HEB — R.F. Botterill *per* HEB

BLASTOBASIDAE

873 *Blastobasis adustella* Wals. (=*lignea* Wals.) — Eversden Wood TL3453 (**29**) 25.vii.2005 — JRD; Kilmacolm NS3670 (**76**) 18.vii.2005 — NG

874 *B. lacticolella* Rebel (=*decolorella* Woll.) — Pentir SH5767 (**49**) 8.viii.2004 — A. Wagstaff *per* JT; Torrs Warren NX1456 (**74**) 26.vi.2005 — SEM; Galashiels NT4936 (**80**) 25.v.2003, det. KPB — JW; Geordies' Wood NN9803 (**87**) 4.vii.2005 — DW; Tresta HU3551 (**112**) 6.viii.2005 — T. Rogers & JC; Barnland T1463 (**H12**) 7.vi.2005 — MO'D

BATRACHEDRIDAE

879 *Batrachedra pinicolella* (Zell.) — Romiley SJ9390 (**58**) 10.vii.2003, genitalia det. — S. Farrell *per* SHH

MOMPHIDAE

880 *Mompha langiella* (Hübn.) — Maulden Woods TL0739 (**30**) 8.vii.2005 vacated mines on *Epilobium hirsutum* — J.E. Childs per DVM

882 *M. locupletella* (D. & S.) — Rosbeg G6797 (**H35**) 30.viii.2005, genitalia det. — JBH

885 *M. conturbatella* (Hübn.) — Talybont Reservoir SO1019 (**42**) larvae on *Chamerion angustifolium* 20.v.2005 — JRL; Glen Artney Junipers NN7717 (**88**) Lrval workings on *Chamerion* 8.vi.2005 — KPB

887 *M. lacteella* (Steph.) — Maesteg SS8690 (**41**) 18.vi.2005, det. DJS — P. Parsons & M. Hnatiuk *per* DJS, **New to Wales**

888 *M. propinquella* (Staint.) — Holkham Dunes TF8645 (**28**) 18.viii.2005 — J. & A. Clifton, J. Wells; Old Weston TL0977 (**31**) 17.vii.2005, genitalia det. BD — K. Royles *per* BD; Loch of Kinnordy RSPB Reserve NO3653 (**90**) 9.viii.2005 — N. Littlewood *per* MRY; Ordiquhill, by Cornhill NJ5755 (**94**) 11.vii.2005 — R. Leverton *per* MRY; Kilphedar, S. Uist NF7419 (**110**) 28.vii.2005 — KPB

890 *M. jurassicella* (Frey) — Yaxley TL1992 (**31**) 29.iv.2005, genitalia det. BD — A. Frost *per* BD

891 *M. sturnipennella* (Treits.) — East Ruston Common TG3427 (**27**) larval galls on *Chamerion angustifolium* 11.vi.2005, moths bred — A. Beaumont *per* KS; Pool Wood SK1314 (**39**) 26.vii.2004 — JC

893 *M. epilobiella* ([D. & S.]) — Cronykeery T2998 (**H20**) 17.iv.2005 — AT

COSMOPTERIGIDAE

896b *Cosmopterix pulchrimella* Chambers — Prawle SX7735 (**3**) larvae and pupae on *Parietaria judaica* 28.i.2005, moths bred — BPH; Fernham SU2991 (**22**) 28.x.2005 — SN

897 *C. lienigiella* L. & Z. — Pagham Harbour SZ8795 (**13**) 19.vi.2005 — SN

898 *Limnaecia phragmitella* Staint. — Ballinoulart pond, S. of Cahore T2043 (**H12**) 12.vii.2005 — MO'D

899 *Pancalia leuwenhoekella* (Linn.) — Portsdown SU6206 (11) 10.vii.2005, indicating a second brood — MRY & JRL

900 *P. schwarzella* (Fabr.) — Newtonmore NN7298 (96), Gleann an t-Slugain NO1494, Glen Callater NO1688 and Glen Clunie NO1487 (92) larvae on *Viola riviniana* Reichb. and *V. ?palustris* L. 24 & 27.vii.2004, moths bred, larva previously unknown — RJH, *Ent. Gaz.* in press

902 *Chrysoclista lathamella* Fletch. — Eype's Mouth undercliff SY4590 (9) in malaise trap early vi.2005, det. PHS, first county record for over 50 years — J. Hunnisett *per* PHS; Kirby Muxloe SK5203 (**55**) 16.vi.2005 — J.R. McPhail *per* MPS; Haydock SJ5696 (**59**) 18.vi.2005 — G. & D. Atherton *per* SMP; Cronykeery T2998 (**H20**) 18.vi.2005 — AT, **New to Ireland**

903 *C. linneella* (Cl.) — Cheltenham SO9422 (**33**) 23.vi.2005 — R. Homan *per* RGG

905 *Blastodacna hellerella* (Dup.) — near Cornhill NJ55 (**94**) 9.vii.2005 — R. Leverton *per* MRY; Barnland T1463 (**H12**) 29.vi.2005 — MO'D

907 *Dystebenna stephensi* (Staint.) — Greenwich Park TQ3976 (16) 22.vii.2004, genitalia det., first vice-county record for over 60 years — THF

908 *Sorhagenia rhamniella* (Zell.) — Woodwalton Fen TL2283 & TL2383 (**31**) 1.vii.2005, genitalia det. — BD

SCYTHRIDIDAE

911 *Scythris grandipennis* (Haw.) — Llanbedrog Headland SH3230 (**49**) larval webs on *Ulex gallii* 27.v.2005, moth bred; Cors Erddreiniog SH4781 (**52**) larval webs on *Ulex gallii* 4.vi.2005 — ANG & JEG

915 *S. picaepennis* (Haw.) — Dunstable Downs TL0020 (**30**) 9.vii.2005, genitalia det. DVM — A. & M. Banthorpe *per* DVM; Garheugh Point NX2650 (**74**) 26.vi.2005 — SEM

TORTRICIDAE

923 *Phtheochroa sodaliana* (Haw.) — Badbury Rings ST9603 (9) 27.vi.2005, first county record for over 50 years — P. Davey *per* PHS

929 *Gynnidomorpha vectisana* (H. & W.) — Wanlip South GP SK6011 (**55**) 14.viii.2005, genitalia det. K. Tailby — G. Finch & K. Tailby *per* MPS

944 *A. williana* (Brahm) — Farcet TL1994 (**31**) 18.v.2005, genitalia det. — BD

945 *A. cnicana* (Westw.) — Glen Trool NX3878 (**73**) 25.vi.2005, det. MRY — JW & T. Prescott; Lacken Wood, Gorey T1363 (**H12**) 9.vii.2005 — MO'D

946 *A. rubigana* (Treits.) — Mersehead NX9355 (**73**) 22.vii.2005 — K. Naylor *per* NG

947 *A. smeathmanniana* (Fabr.) — Isle of Ulva NM4439 (**103**) 22.vi.2005, det. IRT from photograph — NG

955 *Eupoecilia ambiguella* (Hübn.) — Landguard TM2831 (**25**) 26.vii.2005, det. JBH — N. Odin *per* JBH

960 *Falseuncaria ruficiliana* (Haw.) — Tyn-sarn Uchaf, nr Dolgellau SH7415 (**48**) 7.vi.2005, genitalia det. — ANG & JEG; Selkirk Hill NT4828 (**79**) 27.v.2003, det. KPB — JW

964 *Cochylis dubitana* (Hübn.) — Mersehead NX9255 (**73**) 22.vii.2005 — K. Naylor *per* NG

964a *C. molliculana* Zell. — Grain TQ8876 (**16**) 30.vi.2005 — A.G.J. Butcher *per* DJLA; Writtle TL978066 (**19**) in RIS trap 6.ix.2005, genitalia det. — BG; Kensington Gardens TQ2680 (**21**) 2.viii.2005 — THF

966 *C. atricapitana* (Steph.) — Ballinoulart pond, S. of Cahore T2043 (**H12**) 12.vii.2005 — MO'D

967 *C. pallidana* Zell. — Garheugh Point NX2650 (**74**) 26.vi.2005 — SEM

969 *Pandemis corylana* (Fabr.) — Barnland T1463 (**H12**) 30.vii.2005 — MO'D

983 *Choristoneura hebenstreitella* (Müll.) — Pickworth Great Wood SK9815 (55) 17.vi.2005, first county record since 1940 — MPS

990a *Dichelia histrionana* (Fröl.) — Wood Green (**21**) 8.vi.2003, genitalia det. PHS — M. Ashby *per* PHS, *Ent. Rec.* **118**: 19-22, **New to the British Isles**

998 *Epiphyas postvittana* (Walk.) — Dalbeattie NX8360 (**73**) 30.vii.2005 — K. Naylor *per* NG

1000 *Ptycholoma lecheana* (Linn.) — Wood of Cree NX3870 (**73**) 25.vi.2005 — SEM

1006 *Epagoge grotiana* (Fabr.) — Achany NC5700 (**107**) 9.vii.2005 — DW

1007 *Capua vulgana* (Fröl.) — Foxglove Covert, Catterick SE1697 (**65**) 3.vi.2005, det HEB — CHF & J.C. Warwick; Moy, Culbin Forest NJ0162 (**95**) 14.v.2005, det. MRY — JW & I.P. Green; Barnland T1463 (**H12**) 26.v.2005 — MO'D

1008 *Philedone gerningana* ([D. & S.]) — Mynydd Llanllwni SN5038 (**44**) 11.vii.2005 — JSB

1015 *Eulia ministrana* (Linn.) — Barnland T1463 (**H12**) 9.vi.2005 — MO'D

1023 *Cnephasia genitalana* P. & M. — Basingstoke (**12**) 15.vii.2004, genitalia det. — MJW; Chippenham Fen TL6469 (**29**) 15.vii.2005, genitalia det. —DJLA & JRL

1024 *C. incertana* (Treits.) — Asterley Rocks SJ2621 (**47**) larvae on *Teucrium scorodonia* 1.v.2005 — IFS *et al.*

1026 *Exapate congelatella* (Cl.) — Ben Rinnes NJ2535 (**94**) 13.x.2005 — MRY

1034 *Spatalistis bifasciana* (Hübn.) — Coombe Meadow SS4902 (**4**) 6.vi.2005 — R. Wolton *per* RJH; Pickworth Great Wood, SK9815 (**55**) 17.vi.2005 — MPS

1035 *Acleris bergmanniana* (Linn.) — Hollandmey ND2571 (**109**) 24.vii.2005— M.Legg *per* DW

1036 *A. forsskaleana* (Linn.) — Lightburn NS6465 (**77**) 26.vii.2005 — NG

1041 *A. sparsana* ([D. & S.]) — Newton Stewart NX4165 (**74**) larvae on *Fagus sylvatica* 24.vi.2005, moths bred — SEM; Barnland T1463 (**H12**) 24.x.2005 — MO'D

1044 *A. ferrugana* ([D. & S.]) — Harestanes NT6424 (**80**) 6.i.2004, genitalia det. KPB — JW

1046 *A. shepherdana* (Steph.) — Rushmere St Andrew TM2043 (**25**) 29.vi.2005, genitalia det. — JBH

1051 *A. logiana* (Cl.) — Stour Wood TM1931 (**19**) 11.vii.2005, genitalia det. — AMD *per* BG; Cavenham Heath TL7572 (**26**) ten on 11.xi.2005 — L. Gregory *per* AWP; St Peters, Guernsey WV2578 (**113**) 12.xi.2005, det. PHS — PDMC

1053 *A. hastiana* (Linn.) — Thirlestane, Ettrick NT2815 (**79**) 15.iv.2004, det. RMP — JW & L. Douglas;Barnland T1463 (**H12**) 19.iii.2005 — MO'D

1055 *A. hyemana* (Haw.) — Scrape Burn, Drumelzier NT1533 (**78**) 2.iv.2005, det. MRY — JW & R. Holme; Craik NT3408 (**79**) 1.iv.2005, det. MRY — JW, N. Dickson & S. Ghosh

1057 *A. rufana* (D. & S.) — Loch Arklet NN3908 (**86**) 28.ix.2005 — DW

1059 *A. abietana* (Hübn.) — Ellington Banks MoD SE2773 (**64**) 25.iii.2005, genitalia det HEB — CHF, J.C. Warwick & S.P. Worwood

1060 *A. maccana* (Treits.) — Torroy NH5497 (**106**) larval spinning on *Myrica gale* 2003 moth reared — DW

1061 *A. literana* (Linn.) — Lewmoor SS5102 (**4**) 15.iii.2004 — R. Wolton *per* RJH; Barnland T1463 (**H12**) 27.iii.2005 — MO'D

1062 *A. emargana* (Fabr.) — Cunninghaugh, Spey Bay NJ3548 (**94**) 11.ix.2004, genitalia det. RMP — I.P. Green *per* JW; Barnland T1463 (**H12**) 2.ix.2005 — MO'D

1013 *Olindia schumacherana* (Fabr.) — Mersehead NX9355 (**73**) 22.vii.2005 — K. Naylor *per* NG; Achany NC5700 (**107**) 9.vii.2005 — DW

1068 *Celypha rivulana* (Scop.) — Mynydd Llanllwni SN5038 (**44**) 11.vii.2005 — JSB; Ballater NO3795 (**92**) 13.viii.2005 — MRY

1071 *Olethreutes arbutella* (Linn.) — Loch na Capulich NC52 (**107**) spinnings on *Arctostaphylos uva-ursi* 22.iv.2005 — DW

1074 *O. palustrana* (L. & Z.) — Wood of Cree NX3672 (**73**) 25.vi.2005 — SEM

1085 *Metendothenia atropunctana* (Zett.) — Reidside Moss NJ6056 (**94**) 19.vi.2005 — MRY

1086 *Hedya salicella* (Linn.) — Arthog Bog SH6313 (**48**) 9.vii.2005 — ANG & S.E. Stille

1087 *Orthotaenia undulana* ([D. & S.]) — Barnland T1463 (**H12**) 17.vi.2005 — MO'D

1089 *Apotomis semifasciana* (Haw.) — Barnland T1463 (**H12**) 9.vii.2005 — MO'D

1092 *A. turbidana* (Hübn.) — Wood of Cree NX3870 (**73**) 25.vi.2005 — SEM

1093 *A. betuletana* (Haw.) — Kelhead NY1469 (**72**) 5.viii.2005 — K. Naylor *per* NG; Barnland T1463 (**H12**) 22.vii.2005 — MO'D

1094 *A. capreana* (Hübn.) — Rushmere St Andrew TM2043 (**25**) 29.vi.2005 — JBH

1095 *A. sororculana* (Zett.) — Kinloch Hills NG7315 (**104**) 24.v.2005 — DW

1096 *A. sauciana grevillana* (Curtis) — Torroy NH5497 (**106**) 28.v.2003; Achany NC5700 (**107**) 4.vii.2003 — DW

1097 *Endothenia gentianaeana* (Hübn.) — Sharow, Ripon SE3271 (**64**) 11.vii.2005, det HEB — J.C. Warwick *per* CHF

1098 *E. oblongana* (Haw.) — Pembrey Forest SN30 (**44**) 11.vi.2005 — JSB

1104 *E. quadrimaculana* (Haw.) — Barnland T1463 (**H12**) 18.vi.2005 — MO'D

1106 *Lobesia reliquana* (Hübn.) — North Cliffe Wood SE8637 (**61**) 30.v.2005 — EDC *per* HEB

1109 *L. littoralis* (H. & W.) — Rosbeg G6797 (**H35**) 2.ix.2005 — JBH

1110 *Bactra furfurana* (Haw.) — Nosterfield SE2781 (**65**) 1.vii.2005, det. HEB — CHF, J.C. Warwick & S.P. Worwood; Cronykeery T2998 (**H20**) 20.vii.2005 — AT

1112 *B. robustana* (Christ.) — Pembrey Burrows SS4199 (**44**) 17.vi.2005 — JSB & SDSB

1119 *Ancylis geminana* (Don.) — Barnland T1463 (**H12**) 4.vi.2005 — MO'D; Mongorrey, Raphoe, C2505 (**H34**) 8.vi.2005 — SD

1120 *A. mitterbacheriana* ([D. & S.]) — Harestanes NT6424 (**80**) 16.v.2003, det. KPB — JW & M. Scott

1121 *A. upupana* (Treits.) — near Broadwell SO5911 (**34**) 14.v.2005 — G.H.J. Meredith *per* RGG; Morkery Wood SK9518 (**53**) 13.vi.2005 — RWG

1122 *A. obtusana* (Haw.) — Fachongle Ganol SN0836 (**45**) 11.vii.2005 — RE *et al.*

1128 *A. myrtillana* (Treits.) — Kinloch Hills NG7015 (**104**) 24.v.2005 — DW

1132 *Epinotia subocellana* (Don.) — Barnland T1463 (**H12**) 9.vi.2005 — MO'D

1133 *E. bilunana* (Haw.) — Barnland T1463 (**H12**) 15.vi.2005 — MO'D

1134 *E. ramella* (Linn.) — Maes yr Haf SN0538 (**45**) 2.x.2005, det. RE — A.D. Lewis *per* RE

1135 *E. demarniana* (F. v. R.) — Maesteg SS8690 (**41**) 18.vi.2005 — P. Parsons & M. Hnatiuk *per* DJS

1136 *E. immundana* (F. v. R.) — Barnland T1463 (**H12**) 30.iv.2005 — MO'D

1137 *E. tetraquetrana* (Haw.) — Plora Wood NT3436 (**79**) 19.v.2005, det. MRY — JW & S. Hunt

1138 *E. nisella* (Cl.) — Barnland T1463 (**H12**) 27.vii.2005 — MO'D

1139 *E. tenerana* ([D. & S.]) — Kergord HU3954 (**112**) 8.viii.2005, det. JC — T. Rogers *per* JC

1142 *E. tedella* (Cl.) — Mongorrey, Raphoe C2406 (**H34**) 2.vi.2005, det. JRL from photograph — SD

1146 *E. rubiginosana* (H.-S.) — Wood Green TQ3189 (**21**) 20.vi.2004, genitalia det. RT — M. Ashby *per* RT; Martin's Wood SK5015 (**55**) 17.vi.2005, det. J.R. McPhail — G. McPhail & H. Ball *per* MPS

1148 *E. mercuriana* (Fröl.) — Llechwedd Groes, Berwyns SJ0230 (**48**) 21.vii.2005 — ANG & JEG

1151 *E. trigonella* (Linn.) — Barnland T1463 (**H12**) 3.viii.2005 — MO'D

1155 *E. brunnichana* (Linn.) — Kelhead NY1469 (**72**) 5.viii.2005 — K. Naylor *per* NG

1157 *Crocidosema plebejana* Zell. — Earith, Vermuyden TL3975 (**31**) 10.xi.2005, genitalia det. BD — D. Griffiths *per* BD; Heysham SD4162 (**60**) 2.ix.2005, genitalia det. SMP — D. J. Holding *per* SMP

1159 *Rhopobota naevana* (Hübn.) — Kelhead NY1469 (**72**) 5.viii.2005 — K. Naylor *per* NG

1162 *R. myrtillana* (H. & W.) — Reidside Moss NJ6056 (**94**) 19.vi.2005 — MRY

1169 *Gypsonoma dealbana* (Fröl.) — Kippford NX8355 (**73**) 8.vii.2005 — K. Naylor *per* NG

1176 *Epiblema trimaculana* (Haw.) — Minwear Wood SN0513 (**45**) 16.vi.2005 — RE *et al.*

1177 *E. rosaecolana* (Doubld.) — Barnland T1463 (**H12**) 23.vi.2005 — MO'D

1179 *E. incarnatana* (Hübn) — Ellington Banks MoD SE2773 (**64**) 12.viii.2005, det. HEB — CHF & S.P. Worwood

1181 *E. grandaevana* (L. & Z.) — Yaxley TL1791 (**31**) 19.vi.2005, genitalia det. BD — A. Frost *per* BD

1182 *E. turbidana* (Treits.) — Burl Moor, Evershot ST5803 (**9**) 25.vi.2005 — PHS

1184a *E. cirsiana* (Zell.) — Barnland T1463 (**H12**) 4.vi.2005 — MO'D

1192 *Eucosma conterminana* (Guen.) — Totland SZ3286 (**10**) 26.vii.2005, det. B. Elliott — SAK-J, *Ent. Rec.* **118**: 140; South Gare NZ5528 (**62**) 14.viii.2004, det. HEB — P.W. Forster *per* HEB

1200 *E. hohenwartiana* ([D. & S.]) — Ballyteige S9405 (**H12**) 9.vii.2005 — MO'D

1200a *E. parvulana* (Wilk.) — Norton Down ST9245 (**8**) 13.vii.2005, genitalia det. JRL — EGS, MHS, MRY & JRL

1208 *Pseudococcyx posticana* (Zett.) — Woodford Green TQ4192 (**18**) 2.v.2005 — R. Barfoot per BG

1209 *P. turionella* (Linn.) — Kingsthorpe SP7463 (**32**) 26.v.2005 — P.D. Sharpe *per* DVM

1217 *Eucosmomorpha albersana* (Hübn.) — Little Coombe SS5002 (**4**) 9.vi.2004 — R. Wolton *per* RJH

1222 *Strophedra nitidana* (Fabr.) — Bach Howey SSSI SO1042 (**43**) larva on *Quercus petraea* 13.ix.2005 — JRL

1224 *Pammene luedersiana* (Sorh.) — Einig NH383000 (**106**) spinnings on *Myrica gale* 17.vii.2005, moths bred; Strathcarnaig NH7398 (**107**) spinnings on *Myrica gale* 16.vii.2005, moths bred — DW

1225 *P. obscurana* (Steph.) — Ipswich TM2043 (**25**) 26.v.2005 — N. Sherman *per* AWP; Winmarleigh Moss SD4548 (**60**) 7.v.2005, genitalia det. — SMP

1226 *P. agnotana* Rebel — Collyweston Quarries TF0003 (**32**) 30.iv.2005, genitalia det. DVM — P.D. Sharpe *per* DVM

1233 *P. aurita* Raz. — Torrington Common SS4918 (**4**) 6.vii.2004 — S. Hatch *per* RJH

1234 *P. regiana* (Zell.) — 1km. SW of Llandeilo Graban SO0844 (**43**) vacated cocoons under bark of *Acer pseudoplatanus* 1.viii.2005 — JRL

1237 *P. germmana* (Hübn.) — Siccaridge Wood SO9203 (**33**) 28.v.2005 — G.H.J. Meredith *per* RGG

1238 *P. ochsenheimeriana* (L. & Z.) — Foxglove Covert, Catterick SE1697 (**65**) 3.vi.2005, genitalia det. HEB — CHF & J.C. Warwick

1245 *Grapholita janthinana* (Dup.) — Auchencairn NX8051 (**73**) 2005, genitalia det. KPB — E.A.M. MacAlpine *per* KPB

1247 *G. funebrana* (Treits.) — Llangynidr SO1520 (**42**) 30.vii.2005 — JRL; Berwyn (Afon Nadroedd) SH9525 (**47**) 28.vi.2005, genitalia det. — ANG & JEG; Llanbedrgoch SH5180 (**52**) 15.vii.2004, det. M. Hull — M.J. Hammett *per* JH; Cronykeery T2998 (**H20**) 20.vii.2005 — AT

1248 *G. molesta* (Busck) — Norwich TG2308 (**27**) larva 8.ix.2004 in peach imported from Spain, moth bred, genitalia det. JC — A. Beaumont *per* KS; Romiley SJ9390 (**58**) indoors freshly emerged 29.x.2005 — S. Farrell *per* SHH

1249 *G. lobarzewskii* (Now.) — Chessington TQ1864 (**17**) 19.vi.2005 — JP

1252 *G. lunulana* ([D. & S.]) — Merthyr SO0405 (**41**) 26.v.2005, det. DJS — D.R.W. Gilmore & M.C. Powell *per* DJS

1254 *Cydia strobilella* (Linn.) — Abbotskerswell SX8568 (**3**) 30.iv.2005 — BPH

1259 *C. fagiglandana* (Zell.) — Cronykeery T2998 (**H20**) 21.vi.2005 — AT

1260 *C. splendana* (Hübn.) — Barnland T1463 (**H12**) 22.vii.2005 — MO'D

1262 *C. amplana* (Hübn.) — Highworth SU2093 (**7**) 18.viii.2005 — SN

1266 *C. pactolana* Zell. — Stoke Prior SO9567 (**37**) 10.vi.2004 — J. Rush, *BJENHS* **18**: 188

1267 *C. cosmophorana* (Treits.) — Hazelcroft, Gamlingay Wood TL2453 (**31**) 2.vi.2005, genitalia det. — BD

1269 *C. conicolana* (Heyl.) — Rodborough Common SO8402 (**34**) 1.v.2005 — G.H.J. Meredith *per* RGG

1274 *Dichrorampha alpinana* (Treits.) — Mynydd Llangyndeyrn SN4813 (**44**) 13.vi.2005 — JSB

1277 *D. senectana* Guen. — Telpyn SN1707 (**44**) 13.vi.2005, genitalia det. JSB — SDSB *per* JSB

1280 *D. consortana* Steph. — Asterley Rocks Reserve, Llanymynych SJ2621 (**47**) larvae in stems and flower buds of *Leucanthemum vulgare* 1.v.2005, moths bred — IFS

1281 *D. simpliciana* (Haw.) — Ellington Banks MoD SE2773 (**64**) 12.viii.2005, det. HEB — CHF & S.P. Worwood

1285 *D. plumbana* (Scop.) — Garheugh Point NX2650 (**74**) 26.vi.2005 — SEM

1286 *D. sedatana* Busck — Trowbridge ST8658 (**8**) 3.vii.2005 — EGS & MHS

EPERMENIIDAE

477 *Phaulernis dentella* (Zell.) — Sewell Cutting TL0023 (**30**) 9.vi.2005 — L.J. Hill *per* DVM

481 *Epermenia falciformis* (Haw.) — Pilning ST8554 (**34**) 2.vii.2005 — J. Martin *per* RGG

483 *E. chaerophyllella* (Goeze) — Kilmacolm NS3670 (**76**) 8.vi.2005 — NG

SCHRECKENSTEINIIDAE

485 *Schreckensteinia festaliella* (Hübn.) — Inveran NH5797 (**107**) 27.vi.2004 — DW; Allt Volagir, S. Uist NF7929 (110) larvae on *Corylus avellana* 30.vii.2005, moths bred, previously unrecorded foodplant — KPB, *BJENH* **19**: 37

ALUCITIDAE

1288 *Alucita hexadactyla* Linn. — Rosbeg G6797 (**H35**) 30.viii.2005 — JBH

PYRALIDAE

1289a *Euchromius cambridgei* (Zell.) — Northampton (**32**) 17.viii.2005 — P.D. Sharpe *per* DVM, *Ent. Rec.* **118**: 17-18, **Adventive species new to the British Isles**

1292 *Calamotropha paludella* (Hübn.) —Ledbury SO7236 (**36**) 2.vii.2005 — MWH; Penclacwydd SS59 (**44**) 29.vi.2005 — B. Stewart *per* JSB

1300 *Crambus pratella* (Linn.) — Invernaver NC6961 (**108**) 4.vii.2005 — RJH

1302 *C. perlella* (Scop.) — Mersehead NX9256 (**73**) 22.vii.2005 — K. Naylor *per* NG

1309 *Agriphila geniculea* (Haw.) — Mersehead NX9256 (**73**) 22.vii.2005 — K. Naylor *per* NG

1313 *Catoptria pinella* (Linn.) — Kilmacolm NS3670 (**76**) 18.vii.2005 — NG

1314 *C. margaritella* ([D. & S.]) — Culponach Moss NO1957 (**89**) 10.viii.2005 — JW, DW & S. MacBirnie

1316 *C. falsella* ([D. & S.]) — Kippford NX8355 (**73**) 8.vii.2005 — K. Naylor *per* NG; Aberchirder NJ6352 (**94**) 9.vii.2005 — R.J. Smith *per* RMP

1325 *Platytes alpinella* (Hübn.) — Werngwyddel, Nevern SN0939 (**45**) 20.vii.2005, det. AMD — L. & P. Rapley, *Atropos* **27**: 84-85, **New to Wales**; Ballinoulart dunes, S. of Cahore T2043 (**H12**) 12.vii.2005 — MO'D

1329 *Donacaula forficella* (Thunb.) — Braunton Burrows SS4632 (**4**) 9.vii.2005 — S. Hatch *per* RJH

1330 *D. mucronellus* ([D. & S.]) — Castle Douglas NX7462 (**73**) 8.viii.2005 — K. Naylor *per* NG

1332 *Scoparia subfusca* Haw. — Dalbeattie NX8360 (**73**) 25.vii.2005 — K. Naylor *per* NG; Govan NS5365 (**77**) 10.viii.2005 — NG; Barnland T1463 (**H12**) 9.vii.2005 — MO'D

1333 *S. pyralella* ([D. & S.])— Torrs Warren NX1555 (**74**) 26.vi.2005 — SEM; Cragbank NNR NT5807 (**80**) 26.vi.2004, det. RMP — JW & S. Hunt

1338 *Dipleurina lacustrata* (Panz.) — Kilmacolm NS3670 (**76**) 18.vii.2005 — NG

1336 *Eudonia pallida* (Curt.) — Kelburn Country Park NS2156 (**75**) 30.vii.2005; Yetston NS3970 (**76**) 6.vi.2005 — NG

1341 *E. lineola* (Curtis) — Harlech SH5730 (**48**) 26.vi.2005, det. ANG — H. Bantock *per* ANG

1342 *E. angustea* (Curt.) — Rosbeg G6797 (**H35**) 30.viii.2005 — JBH

1343 *E. delunella* (Staint.) — Barnland T1463 (**H12**) 11.vii.2005 — MO'D

1345 *Elophila nymphaeata* (Linn.) — Craik NT3408 (**79**) 16.vii.2005 — JW, N. Dickson & S. Ghosh; Milkhall Pond NT5427 (**83**) 26.vii.2004 — N. Crowther *per* JW; nr Aberchirder NJ6352 (**94**) 9.vii.2005 — R. Smith *per* MRY; Croy NH7948 (**96**) 9.vii.2005 — S. Gyseman *per* JW

1348 *Parapoynx stratiotata* (Linn.) — Ballinoulart pond, S. of Cahore T2043 (**H12**) 12.vii.2005 — MO'D

1351 *Nymphula diminutalis* (Snell.) — Eynesbury TL1858 (**31**) indoors 3.iii.2005 — T. Heath *per* BD

1356 *Evergestis forficalis* (Linn.) — Torrs Warren NX1456 (**74**) 26.vi.2005 — SEM

1358 *E. pallidata* (Hufn.) — Brig End, Cree Valley NX3576 (**74**) 26.vi.2005, det. MRY — JW & T. Prescott; Craik NT3408 (**79**) 16.vii.2005, det. MRY — JW, N. Dickson & S. Ghosh; Craik NT346084 (**80**) 16.vii.2005 – JW; Kilpheder, S. Uist NF7419 (**110**) 31.vii.2005 — KPB

1362 *Pyrausta purpuralis* (Linn.) — Lochanbreck NX6663 (**73**) 30.vii.2005 — K. Naylor *per* NG

1375 *Ostrinia nubilalis* (Hübn.) — Eswick, central Mainland (**112**) 13.vii.2003 — T.D. Rogers *per* MGP, **New to Scotland**

1376 *Eurrhypara hortulata* (Linn.) — Kippford NX8355 (**73**) 8.vii.2005 — K. Naylor *per* NG; Plora Wood NT3436 (**79**) 14.vi.2003 — JW & P. Lusby

1378 *Phlyctaenia coronata* (Hufn.) — Kippford NX8355 (**73**) 8.vii.2005 — K. Naylor *per* NG

1380 *P. perlucidalis* (Hübn.) — Witton Brook, Northwich SJ6575 (**58**) 17.vi.2005 — SHH

1381 *Anania funebris* (Ström) — Betws SN6412 (**44**) 8.vi.2005 — B. Stewart *per* JSB

1391 *Udea decrepitalis* (H. – S.) — Quave Burn NT2218 (**79**) 30.v.2003, det. KPB — JW

1400 *Antigastra catalaunalis* (Dup.) — Barnland T1463 (**H12**) 14.x.2005 — MO'D, **New to Ireland**

1403a *Duponchelia fovealis* Zell. — Hornsey, London TQ3189 (**21**) 8.ix.2005 — M. Ashby *per* CWP; Market Bosworth SK4002 (**55**) indoors 23.ii.2005, det. A.P. Russell — D. & M. Penton *per* MPS

1405 *Pleuroptya ruralis* (Scop.) — Kilmacolm NS3670 (**76**) 18.vii.2005; Glasgow NS5667 (**77**) 9.vii.2005 — NG; Plora Wood NT3436 (**79**) 24.vii.2003, det. KPB — JW & S. Hunt; Kindrogan Field Centre NO0562 (**89**) 13.vii.2004 — JW *et al.*; Dumbarton NS3875 (**99**) 9.vii.2005 — K. & S. Futter *per* NG

1421 *Aglossa pinguinalis* (Linn.) — Chittlehampton SS6226 (**4**) 25.vii.2005 — M. Braid *per* BPH

1424 *Endotricha flammealis* ([D. & S.]) — Haxby SE6057 (**62**) 17.vii.2005 — T.J. Crawford *per* HEB

1425 *Galleria mellonella* (Linn.) — Llangennech SN5601 (**44**) 2.vii.2005 — R. Pryce *per* JSB

1428 *Aphomia sociella* (Linn.) — Dalbeattie NX8362 (**73**) 6.vii.2005 — D. Welham *per* NG; Kelburn Country Park NS2156 (**75**) 30.vii.2005 — NG

1433 *Cryptoblabes bistriga* (Haw.) — Llanberis SH5760 (**49**) 24.vi.2005 — S.J. Thomas *per* JT; Barnland T1463 (**H12**) 9.vii.2005 — MO'D

1437 *Acrobasis consociella* (Hübn.) — Lacken Wood, Gorey T1363 (**H12**) 16.vii.2005 — MO'D

1439 *Trachycera advenella* (Zinck.) — Kelhead NY1469 (**72**) 5.viii.2005 — K. Naylor *per* NG; Newtown St Boswells Wood NT5831 (**80**) 23.vii.2004, det. RMP — JW & R. Holme

1447b *Sciota rhenella* (Zinck.) — Greatstone (**15**) 21.vi.2005, det. SPC, genitalia conf. DJLA — B. Banson *per* SPC, **New to the British Isles**

1454 *Dioryctria abietella* ([D. & S.]) — Barnland T1463 (**H12**) 29.vi.2005 — MO'D

1454b *D. sylvestrella* (Ratz.) — Headley SU5162 (**12**) 4.viii.2005 — A.H. Dobson *per* IRT; Magdalen Laver TL508081 (**19**) 28.viii.2005 — T.W. Green *per* BG

1486 *Apomyelois bistriatella* (Hulst) — Llanelli SN5200 (**44**) 21.vi.2005 — B. Stewart *per* JSB; Lon Las Ogwen/ Afon Cegin corridor SH5869 (**49**) 17.vi.2005, genitalia det. — S.J. Thomas *per* JT

1468 *Nyctegretis lineana* (Scop.) — Grain TQ8876 (**16**) 30.viii.2005 — A.G.J. Butcher *per* DJLA

1475 *Ephestia kuehniella* Zell. — Felindre Farchog SN1039 (**45**) 16.xii.2005, genitalia det. MSP — J. Atkinson *per* MSP

1477 *E. figulilella* (Gregs.) — Wood Green TQ3189 (21) 14.vi.2003, genitalia det. RT, first county record for over 100 years — M. Ashby *per* RT; Rhiwlas SH5865 (**49**) indoors 28.viii.2004, genitalia det. S.J. Thomas — JH

1478b *Vitula biviella* (Zell.) — Icklesham TQ8815 (**14**) 9.viii.2005, genitalia det. MSP — I. Hunter *per* MSP

1479 *Plodia interpunctella* (Hübn.) — Felindre SN1039 (**45**) indoors 13.ix.2005, det. MSP — J. Atkinson *per* RE

1483 *Phycitodes binaevella* (Hübn.) — Barnland T1463 (**H12**) 22.vii.2005 — MO'D

PTEROPHORIDAE

1496 *Cnaemidophorus rhododactyla* ([D. & S.]) — Bradway SK3280 (**63**) 15.vii.2005, det. HEB from photograph — P. Housley *per* HEB

1498 *Amblyptilia punctidactyla* (Haw.) — Inchmarlo NO6796 (**91**) 14.ix.2005 — C.W.N. Holmes *per* RMP; Barnland T1463 (**H12**) 11.vii.2005 — MO'D

1506 *Stenoptilia millieridactyla* (Bruand) — Chester-le-Street NZ276510 (**66**) 6.ix.2005 — K. Dover *per* CH

1507 *S. zophodactylus* (Dup.) — Landguard TM2831 (**25**) 8.vii.2004, genitalia det. JBH — N. Odin *per* JBH; Pembrey Burrows SS4299 (**44**) 5.ix.2005 — JSB

1508c *S. annadactyla* Sutter — Hockwold TL7490 (**28**) larvae on *Scabiosa columbaria* 9.v.2005, moths bred, genitalia det. — CH, **New to the British Isles**

1512 *Merrifieldia baliodactylus* (Zell.) — Folkestone Warren TR2538 (15) larva on *Origanum* 16.vii.2005, emerged 29.vii.2005, indicating a second brood — DJLA & JRL

1517 *Adaina microdactyla* (Hübn.) — Bishop Monkton SE3465 (**64**) 2.vi.2005, det. HEB — D.J. & D.M. Bowes *per* CHF; Blackford NT2570 (**83**) 1.ix.2005 — KPB

1520 *Hellinsia osteodactylus* (Zell.) — Enderby Quarry SP5399 (**55**) 12.vii.2005 — MPS

1524 *Emmelina monodactyla* (Linn.) — Lochwinnoch NS3558 (**76**) 1.vii.2005; Govan NS5365 (**77**) 10.v.2005 — NG

1524a *E. argoteles* (Meyr.) — Wicken Fen TL5670 (**29**) 24.vi.2005, genitalia det. — JBH. **New to the British Isles**

Correction to 2004 Review

898 *Limnaecia phragmitella* Staint. — 'R. Terry' should read 'T.D. Rogers'

Announcement: A new award for insect taxonomy – The J. O. Westwood Medal

In response to the urgent need to expand the research effort in insect taxonomy and to encourage monographic revisionary work, the Department of Entomology of the Natural History Museum, and the Royal Entomological Society, plan to launch a new joint award for excellence in insect taxonomy. A medal will be awarded biennially for the best comprehensive taxonomic work on a group of insects or related arthropods (including terrestrial and freshwater hexapods, myriapods, arachnids and their relatives), typically a taxonomic revision or monograph, as judged by an independent, international panel of experts and agreed by representatives of the two organisations. The award of this medal will recognise only the highest standards in descriptive taxonomy.

The award is named in honour of the leading 19th century British entomologist, John Obadiah Westwood (1805-1893). Westwood was the inaugural holder of the Hope Chair of Entomology at the University of Oxford, when it was established by the Reverend F.W. Hope in 1863. Westwood was one of the original group of founding members of the then Entomological Society of London in 1833 and served as President for three separate periods, 1851-52, 1872-73 and 1876-77. In 1883 he was elected to the unique position of Honorary Life President of the Society. He was a prolific author and published on most groups of insects and illustrated his own works, and those of many others, with his exquisite drawings and paintings. Perhaps his most influential work was *An Introduction to the Modern Classification of Insects* published in two volumes in 1839, pp 1-462, and 1840, pp 1-587, by Longman, Orme, Brown, Green and Longmans, London. As a major appendix to volume 2 he added his *Synopsis of the Genera of British Insects*, pp 1-158. In this latter he first clearly established the concept of a type species for a genus, analogous to the type specimen for a species, and thus helped to provide a stable foundation for insect nomenclature. It is particularly appropriate that our new award should be dedicated to this early pioneer of insect taxonomy.

The winner of the inaugural Westwood medal will be announced early in 2008, appropriately the 250th anniversary of the publication of the 10th edition of Linnaeus's *Systema Naturae*. The medal will be presented at an appropriate occasion later in the year when the winner will have the opportunity to give a presentation on his/her work.

Leading taxonomists who have agreed to serve on the first selection panel for this award include Ralph Harbach, Norman I. Platnick, Edward O. Wilson, Quentin Wheeler and James Woolley. All interested in applying themselves, or in nominating another author, should submit a nominating letter, two letters of support from acknowledged experts, and three copies of the work by no later than 30 March, 2007, to Westwood Medal, Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD,UK, or electronically to j.westwood@nhm.ac.uk.— MIKE CLARIDGE, Royal Entomological Society and MARTIN HALL, Natural History Museum.

A COMPARISON OF MOTHS RECORDED AT THE WRITTLE COLLEGE ROTHAMSTED TRAP 1968-1993 AND 2000-2004 WITH THE NATIONALLY COLLECTED DATA

[1] R.G Field, [2] T. Gardiner and [2] M. J. Heywood

[1] *Butterfly Conservation, Cambridgeshire and Essex Branch, 166 Sherwood Avenue, Northampton, NN2 8TE, 01604-844927, rfield8633@aol.com*

[2] *Writtle College, Lordship Road, Writtle, Chelmsford, Essex, CM1 3RR*

Abstract

Moth trapping using a Rothamsted trap has taken place on the Writtle College estate in Essex since 1968. Over the period 1968 to 1993 moth species richness and abundance was generally on the increase, but trapping ceased in 1993. It was restarted in 2000 and over this second period moth species richness had fallen by 21%, but catch abundance has increased by 25% when compared to the first period. This was not in line with national data, as overall Rothamsted catches have fallen by nearly one third. Results from 2000 to 2004 for the 17 most numerous species caught at Writtle between 1968 and 1993, revealed that 11 have now reduced in number, five have increased whilst one is stable.

Introduction

Rothamsted light traps have used to catch moths at Writtle since 1968, but nationally these have not been analysed until recently (Fox *et al.*, 2006). At Writtle trapping had taken place since the start of the scheme in 1968, but finished in 1993 when the science laboratories moved and the trap was dismantled. The data from 1968 to 1993 (no data collected 1973, 1982 and 1983) was evaluated by Gardiner and Field (2001; 2004) and 17 of the most commonly caught species identified. At that time 39,953 individual macro-moths comprising 345 species had been recorded. The number of moths caught was fairly stable over the period with 1975 and 1976 being very good years. The species richness increased towards the end of the period but once again 1975 and 1976 were the best years.

Analysis of the Writtle data up to 1993 seemed to suggest that there was little to worry about in terms of moth abundance and species richness. However, the information gathered nationally from 1968-2002 indicates a different representation (Fox *et al.*, 2006). The total number of moths recorded in Rothamsted trap samples has declined by a third since 1968. Population trends have been calculated for 337 common species of which 226 species show a decreasing trend. Application of the IUCN criteria suggests that 71 species (21%) of these common moths are threatened. Of these, following Fox *et al.* (2006),15 species could be classed as 'Endangered' and 56 can be classed as 'Vulnerable'. Of the 17 most common moths (species with over 500 recorded adults) found at Writtle between 1968 and 1993 (Gardiner and Field, 2001), one could now be classed as 'Endangered' and two could be classed as 'Vulnerable'.

The authors will investigate how moth species richness and abundance has varied from the first trapping period of 1968-1993 to the second period 2000-2004 and what effects, if any, are there on the 17 most common species at Writtle. A comparison of the abundance of these 17 species will also be drawn between local and national data.

Methods

Writtle College is located in the south-east of England, two kilometres from Chelmsford in Essex (O. S. grid reference TL 670070). The College estate extends over 210 hectares and consists of agricultural, horticultural and conservation areas, of which about 15 hectares of conservation meadows, pastures, field margins and set-aside have been established since the mid 1990s. The Rothamsted trap was reinstated in 2000, not in the original position next to the main building but about 500 metres south, next to the new science centre and within the weather station compound. The old trapping site was within a parkland type setting with lawns and mature trees, with a large orchard some 200 metres away. The new site was on the edge of the farm with arable fields on one side and native trees and grassland on the other. An orchard and horticultural grounds are about 300 metres from the trap. The possible effects of that change will be discussed later. The moths are collected each day and sent to Rothamsted for identification and a list received once a year stating species and number of individuals caught and the date of first and last catch.

The changes in individual moth abundance at Writtle were calculated by comparing the average catches from 1968 to 1993 to those from 2000 to 2004. It is important to highlight that this was not the method used to calculate the national trends and therefore direct comparison was impossible.

Results

Over the period 2000-2004, on average 102 species and 2180 individuals were caught each year. The species richness recorded during 2000-2004 has decreased when compared to the average of 130 species recorded during the period 1968-1993, but the number of individuals caught has increased from the average of 1737 caught each year between 1968 and 1993 (Table 1).

During the period 2000-2004, of the 17 most common species identified by Gardiner and Field (2001) for the period 1968-1992, 11 have reduced, five have increased and one has remained stable at Writtle (Table 2). Several of these species such as Heart & Dart *Agrotis exclamationis* (67% national decline), Mottled Rustic *Caradrina morpheus* (73% decline) and Dark-barred Twin-spot Carpet *Xanthorhoe ferrugata* (92% decline) mirror the national declines but others do not. Common Wainscot *Mythimna pallens* (64% national decline) has increased by 535%, whilst Small Square-spot *Diarsia rubi* (85% national decline) has also increased by a 172% but has shown a severe decline in 2003 and 2004. Lunar Underwing *Omphaloscelis lunosa* (100% national rise) has reduced by 64% at Writtle and is following a 8-10 year cycle of boom and bust. Smoky Wainscot *Mythimna impura* which has been stable nationally shows a 437% rise at Writtle while Common Footman *Eilema lurideola* (40% national rise) has only increased slightly at Writtle.

Four species, Silver Y *Autographa gamma*, Hebrew Character *Orthosia gothica*, Willow Beauty *Peribatodes rhomboidaria*, and Brimstone Moth *Opisthograptis luteolata* are showing larger declines at Writtle than found nationally (Table 2) and may be on the point of being lost altogether from the estate. Silver Y is an immigrant and the decline may be for reasons which lay outside Writtle.

Table 1. Number of moth species and individuals caught 1968-1993 and 2000-2004.

Year	No. of species	No. of individuals	Year	No. of species	No of individuals
1968	126	2128	**1985**	123	1846
1969	106	1249	**1986**	155	2181
1970	91	1684	**1987**	139	1553
1971	83	1110	**1988**	147	1794
1972	93	858	**1989**	127	1690
1974	145	1970	**1990**	154	1594
1975	163	3788	**1991**	155	1989
1976	161	3852	**1992**	164	1813
1977	99	740	**1993**	142	1278
1978	129	936	**2000**	98	1189
1979	123	1297	**2001**	104	3473
1980	127	1202	**2002**	87	1221
1981	113	885	**2003**	110	2865
1984	141	2516	**2004**	112	2150

Another 15 species (Table 3) trapped at Writtle between 2000 and 2004 could be classed as 'Endangered' or 'Vulnerable' (Fox *et al.*, 2006). Of these species caught between 2000 and 2004, four, Rosy Rustic *Hydraecia micacea,* Cinnabar *Tyria jacobaeae*, Blood-vein *Timandra comae* and Latticed Heath *Chiasmia clathrata*, are showing slightly increasing trends at Writtle, but one, Buff Ermine *Spilosoma luteum,* is declining. Dark Spinach *Pelurga comitata*, Mouse Moth *Amphipyra tragopoginis* and The Rustic *Hoplodrina blanda* have declined and may even now have been lost at Writtle. The remaining seven Deep-brown Dart *Aporophyla lutulenta,* Grass Rivulet *Perizoma albulata,* Large Wainscot *Rhizedra lutosa*, The Sallow *Xanthia icteritia*, Knot Grass *Acronicta rumicis*, Grey Dagger *Acronicta psi* and White Ermine *Spilosoma lubricipeda* are at very low numbers.

In total, 11 of the 'Endangered' moths species were caught between 1968 and 1993 (Table 4) but only three were caught between 2000 and 2004, of which two, Dark Spinach *Pelurga comitata* and Grass Rivulet *Perizoma albulata* had not been caught during the first trapping period. This is a 73% reduction in species richness on 'Endangered' species. 'Vulnerable' species faired only slightly better, 41 were caught between 1968 and 1993 (Table 4) but only 15 of these were still caught between 2000 and 2004. This represents a 65% reduction in species richness. During the period up to 1984, on average 0.5 'Endangered' or 'Vulnerable' species were lost each year. Between 1985 and 1993, 2.3 species were lost each year but from 1994 to 2004, the loss reduced to 0.6 species each year (Table 4).

Table 2. Species with over 500 records for the period 1968-1993 and catches 2000-2004.

Species	Average catch 68-93	Years seen	Catch 2000	Catch 2001	Catch 2002	Catch 2003	Catch 2004	Trend National	Trend National %
Heart & Dart *Agrotis exclamationis*	119	23	21	13	16	12	6	↓	↓88
Common Wainscot *Mythimna pallens*	118	23	423	1504	123	1012	100	↓	↑535
Mottled Rustic *Caradrina morpheus*	81	23	17	4	23	51	22	↓	↓71
Lunar Underwing *Omphaloscelis lunosa*	80	23	26	27	15	19	56	↑	↓64
Setaceous Hebrew Character *Xestia c-nigrum*	69	23	113	263	43	145	84	↑	↑939
Common Rustic *Mesapamea secalis*	61	22	15	107	22	56	16	↑	↓28
Riband Wave *Idaea aversata*	59	22	18	25	22	27	39	↑	↓55
Flounced Rustic *Luperina testacea*	58	20	40	22	22	18	40	↓	↓51
Small Square-spot *Diarsia rubi*	56	23	78	341	45	18	1	↓	↑172
Hebrew Character *Orthosia gothica*	49	23	0	4	3	0	4	↓	↓95
Smoky Wainscot *Mythimna impura*	48	21	66	195	186	305	299	→	↓437
Silver Y *Autographa gamma*	47	23	7	4	3	18	2	↓	↓85
Dark-barred Twin-spot Carpet *Xanthorhoe ferrugata*	35	21	0	0	0	3	0	↓	↓98
Square-spot Rustic *Xestia xanthographa*	30	20	78	85	187	203	254	↑	↑538
Willow Beauty *Peribatodes rhomboidaria*	25	18	1	0	0	1	1	↓	↓96
Brimstone Moth *Opisthograptis luteolat*	24	23	5	3	4	4	1	↓	↓85
Common Footman *Eilema lurideola*	23	21	16	21	22	31	36	↓	→

↑ - increasing

↓ - decreasing

→- stable

Bold trend figures – 'Endangered' or 'Vulnerable' species nationally (Fox *et al.*, 2006)

Table 3. Other 'Endangered' and 'Vulnerable*' moth species trapped at Writtle 2000 to 2004.

	Average catch 68-93	Catch 2000	Catch 2001	Catch 2002	Catch 2003	Catch 2004	Trend National	Trend Writtle
Grass Rivulet *Perizoma albulata*	0	0	0	0	0	1	↓	→
Dark Spinach *Pelurga comitata*	0	1	0	1	0	0	↓	X
Deep-brown Dart *Aporophyla lutulenta*	11	2	0	0	1	2	↓	↓
Latticed Heath *Chiasmia clathrata*	5	4	0	0	34	37	↓	↑
Large Wainscot *Rhizedra lutosa*	<1	0	0	1	0	0	↓	→
Rosy Rustic *Hydraecia micacea*	4	2	5	10	13	19	↓	↑
Cinnabar *Tyria jacobaeae*	<1	2	0	2	1	14	↓	↑
The Sallow *Xanthia icteritia*	<1	1	0	0	0	0	↓	→
Knot Grass *Acronicta rumicis*	<1	0	1	0	0	0	↓	→
Blood-vein *Timandra comae*	10	2	18	11	23	19	↓	↑
Grey Dagger *Acronicta psi*	<1	1	0	0	0	0	↓	→
White Ermine *Spilosoma lubricipeda*	14	1	5	3	7	2	↓	↓
Rustic *Hoplodrina blanda*	2	4	15	5	0	0	↓	X
Mouse Moth *Amphipyra tragopoginis*	7	3	1	0	0	0	↓	X
Buff Ermine *Spilosoma luteum*	9	3	2	8	7	6	↓	↓

↑ - increasing

↓ - decreasing

→ - stable

X - in danger of being lost or already lost from Writtle

Bold trend figures – 'Endangered' species nationally (Fox *et al.*, 2006)

* - 'Vulnerable' - status category determined in Fox *et al.* (2006)

Discussion

Fox *et al.* (2006) suggest several reasons for the national decline in larger moths and have discovered that the south-east of Britain has the greatest proportion of substantial declines when compared to the south-west and the north. They highlight the loss of natural habitats, with 97% of lowland flower-rich grassland lost, 75% coppiced woodland lost, 50% ancient broad-leaved woodlands lost and 40% lowland

heath lost, all since the 1940s (Asher *et al.*, 2001). Other reasons given for the decline of moth populations may be the increased use of pesticides (Ansell *et al.*, 2001), increased pollution from both vehicles and light, and climate change (Conrad *et al.*, 2002).

Several of these suggested reasons for the loss of moth species can be investigated on the Writtle College estate as detailed habitat management has taken place for the last 30 years. Whereas nationally the quality and quantity of native habitats have declined, at Writtle more semi-natural habitats have been created. The authors have therefore drawn up an effects table (Table 5) to help investigate wider changes to moth populations on the estate.

It is safe to suggest that until about 1974 the Writtle College estate would have fitted into the national changes in the countryside. Hedges had been removed and as much land was in production as possible. In fact the farm was one of the most productive in the county in the 1960's. From 1974 onwards a process of woodland planting and hedgerow replacement commenced. In 1976 a detailed survey of the College estate was conducted (Neate, 1979) to assess what was present. Hedgerow planting and flower-rich grassland reseeding continued through the 1980s but it was not until the early 1990s that this became larger scale. This work continued until the end of the monitoring period with more meadows and pastures sown, more hedgerows planted (under the Countryside Stewardship scheme [CSS]) and trees planted (under the Woodland Grant Scheme). This may, in part, account for the reduced loss of 'Endangered' and 'Vulnerable' moth species from 1993 as more suitable habitats were created, but still over 30 of these species have been lost.

At the same time the farm had put two fields in permanent set-aside and although these were sown with an agricultural ley mix, it was better than not having them as grassland. The farm joined the CSS in 1996 and established two and six metre wide grass margins around many of the fields and started to carry out coppicing and laying on the estates hedgerows. Thus the losses of habitat suffered in many parts of the country were not as prevalent at Writtle.

By the late 1990s much of the amenity grassland at Writtle was being managed in a more wildlife friendly manner. Areas of long grass were being left, and other areas of grassland were sown with wildflowers. However, this still amounted to less than 10% of the manicured lawn area.

These increased areas of new grassland and the improvement in management of existing grassland may be one of the reasons why Common Wainscot, Small Square-spot and Smoky Wainscot have increased dramatically at Writtle but have not shown these same increases nationally. Square-spot Rustic *Xestia xanthographa* could also have increased to a greater extent at Writtle than it has done nationally for these reasons but why Lunar Underwing, Flounced Rustic *Luperina testacea* and Common Rustic *Mesapamea secalis* have also not increased is unclear. Lunar Underwing seems to be following an 8-10 year cycle of boom and bust and could increase dramatically again in the next few years.

Several species are reliant on herbaceous plants as larval food plants and more of these plants are available on the estate due to the meadow plantings. Setaceous

Table 4. 'Endangered' and 'Vulnerable' species lost at Writtle and year last recorded.

Endangered*	**Year**	**Vulnerable***	**Year**
Dusky Thorn *Ennomos fuscantaria*	1990	Feathered Gothic *Tholera decimalis*	1985
Hedge Rustic *Tholera cespitis*	1993	Lackey *Malacosoma neustria*	1992
V-moth *Macaria wauaria*	1988	Garden Tiger *Arctia caja*	1991
Double Dart *Graphiphora augur*	1974	Dot Moth *Melanchra persicariae*	1990
Spinach *Eulithis mellinata*	1986	Large Nutmeg *Apamea anceps*	1991
Garden Dart *Euxoa nigricans* Figure of Eight	1984	Flounced Chesnut *Agrochola helvola*	1980
Diloba caeruleocephala	1988	Pale Eggar *Trichiura crataegi*	1989
Dusky-lemon Sallow *Xanthia gilvago*	1991	Oblique Carpet *Orthonama vittata*	1986
White-lined Dart *Euxoa tritici*	1971	Sprawler *Asteroscopus sphinx*	1986
September Thorn *Ennomos erosaria*	1978	Small Emerald *Hemistola chrysoprasaria*	1993
		Oak Hook-tip *Watsonalla binaria*	1992
		August Thorn *Ennomos quercinaria*	1988
		Brindled Beauty *Lycia hirtaria*	1993
		Red Carpet *Xanthorhoe decoloraria*	1974
		Dark Brocade *Blepharita adusta*	1987
		The Streak *Chesias legatella*	1984
		Small Phoenix *Ecliptopera silaceata*	1991
		Broom Moth *Melanchra pisi*	1986
		Powdered Quaker *Orthosia gracillis*	1992
		Dusky Brocade *Apamea remissa*	1991
		Brown-spot Pinion *Agrochola litura*	1992
		Centre-barred Sallow *Atethmia centrago*	1986
		Shaded Broad-bar *Scotopteryx chenopodiata*	1993
		Minor Shoulder-knot *Brachylomia viminalis*	1985
		Shoulder-striped Wainscot *Mythimna comma*	1980
		Ear Moth *Amphipoea oculea*	1969

* status categories determined in Fox *et al.* (2006)

Hebrew Character *Xestia c-nigrum* has increased at Writtle to a much greater extent than nationally. However, two species reliant on herbaceous plants have performed very poorly both at Writtle and nationally. Dark-barred Twin-spot Carpet could be classed as 'Endangered' (Fox *et al.*, 2006) nationally, and averaged less than one adult per year at Writtle during 2000-2004 whilst on average, 35 were trapped each

year between 1968 and 1993. Mottled Rustic which could be classed as 'Vulnerable' nationally (Fox *et al.*, 2006) has seen the average yearly catch reduced from 81 during 1968-1993 to less than 24 during 2000-2004. Also Riband Wave *Idaea aversata* is reliant on herbaceous plants and is up slightly nationally but was 55% down at Writtle during the second trapping period.

Table 5. Possible positive and negative effects on moth species richness and abundance on the Writtle College estate.

Positive effects	**Negative effects**
Creation of native grassland	Reduced variety of arable and horticultural crops
Set-aside grassland	Loss of orchards
Tree and hedge planting schemes (native species)	Increased building development on the estate
Less intensive management of amenity grassland (less regular cutting and areas left long)	Increased light pollution
Good hedgerow management	Increased traffic and more emissions
Climate change	Climate change
Movement of trap	Movement of trap
Creation of arable field margins	Use of pesticides on crops

The movement of the trap from its original site is suggested as a positive and a negative effect (Table 5). It is suspected that the decline in catches of three species can in part be put down to that move. Hebrew Character, Willow Beauty and Brimstone Moth would have all favoured the trees found around the original trap, whereas the new site is more open. Grassland species such as Common Wainscot, Small Square-spot and Smoky Wainscot may well have benefited from the movement of the trap to an area which was more suitable for them with tall grassland nearby.

The changing variety of crops grown at Writtle could have had an effect on various species. The orchards were mainly removed in the late 1990's and this may have affected the abundance of the Brimstone Moth whilst the reduction in horticultural crops grown may have affected the abundance of the Silver Y. Heart & Dart which has declined nationally and at Writtle, uses a wide range of habitats such as lowland arable farmland, pasture and gardens (Waring and Townsend, 2003). This species could have suffered from the change in trap position and the reduction in the variety of crops grown and increased pesticide use, but these reasons may not explain the large drop nationally. Thus they may not be the main reason for the reduction in abundance of this species on the College estate.

Since 1993 there has been an expansion of the College facilities due to a growth in student numbers. New buildings have been erected, new car parks built and extra outdoor lights put up. The increased number of students has meant more cars, more

disturbance and more light pollution. The traffic through Writtle village has increased over the period generating more pollution. This could be part of the reason for the lack of an increase at Writtle of the Common Footman as nationally it showed an increase of 40%. The larvae of this species feed on lichens and whereas the air quality may have improved in many parts of the country, fewer lichens grow in the more polluted south-east of England.

Climate change is also identified as both a positive and negative effect and only time will tell whether more or less species are favoured by our changing climate. From the data obtained from the Rothamsted trap at Writtle it seems impossible to identify any trends with regard to climate change other than to say that if it is happening to any great extent then there are no signs that it is favouring moth species richness at the moment.

Conclusions

For various reasons suspected and unknown, moth species richness had declined by 2004 to a level found in the late 1960s and early 1970s at Writtle. With regard to moth abundance, even though nationally catches are down by approximately a third (Fox *et al.*, 2006) the catches at Writtle have remained stable with 2001 and 2003 being the 3rd and 4th best years behind 1976 (1st) and 1975 (2nd) over the period 1968-1993 and 2000-2004.

Of the 17 most abundant moth species trapped during the period 1968 to 1993, six would now not feature using data from 2000-2004. These include the most abundant species from 1968 to 1993, Heart & Dart, Brimstone Moth, Willow Beauty, Dark-barred Twin-spot, Silver Y and Hebrew Character. Their places could be taken by species which have increased dramatically nationally such as Straw Dot *Rivula sericealis* (188%), Least Carpet *Idaea rusticata* (41,696%), Cloaked Minor *Mesoligia furuncula* (114%) and Vine's Rustic *Hoplodrina ambigua* (413%) (Fox *et al.*,2006).

The exact reasons for these trends are unknown and without in-depth research into each species they may never be known. Other data sets from long running Rothamsted sites should be evaluated to establish whether they help to clarify the situation. It could be that, especially in the south-east, we have reached a critical point with habitat loss, development pressures and pollution and maybe even climate change all adversely affecting moth abundance and species richness, to a point they can not recover from.

Acknowledgements

The authors would like the thank Rothamsted Research for identifying the moths caught since 2000 plus the many Writtle and Rothamsted staff who worked on moth identification between 1968 and 1992. Many thanks also due to Mark Parsons from Butterfly Conservation, Kelvin Conrad and Ian Woiwod at Rothamsted Research for their comments on an initial draft of the paper.

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Calamotropha paludella (Hb.) (Lep.: Pyralidae) in Herefordshire

Being unable to sleep on the exceptionally warm night of 29 July 2006, I was suddenly aware of a small moth flying around the bed. This, when boxed and identified the following morning, proved to be *Calamotropha paludella* only the second county record for this species, the first record having been made at Ledbury on 2 July 2005 by M. W. Harper (*antea*: 263). The larva feeds on *Typha latifolia* and there is a good stand of the foodplant approximately 100 yards from the house. The moth seems quite scarce in this region and there are only two records for the neighbouring county of Gloucestershire: For East Gloucestershire (VC 33) there is a record from Gloucester on 2 July 2001 (*Ent. Rec.* **114**: 280) and for West Gloucestershire (VC 34) there is one from the Wildfowl and Wetlands Trust site at Slimbridge, on 6 August 1999.— M. J. Leech, Lyston House, Wormelow, Herefordshire HR2 8EL.

Hazards of butterfy collecting. Money-laundering – Kyabobo National Park, Ghana, August 2005

"Money-laundering makes the world go round" ... or am I mis-representing the words from a popular, old musical? Actually, money-laundering is a set of processes that is poorly understood by most people, though the concept is clear: making dirty money clean.

In Denmark we had a splendid line of films some 25 years ago revolving around the "Olsen-gang" – seven or eight were produced. The basic framework was always the same: 1) Egon Olsen, master criminal, was released from jail and picked up by his less masterly accomplices to the title tune of the series; 2) Egon Olsen had a "plan", a complicated and ingenious plan; 3) the plan – with some entertaining wobbles – was implemented with panache and precision; 4) the gang stood with several million kroner/dollars/deutschmark worth of loot; 5) somebody else somehow managed to make away with the loot; and 6) Egon Olsen went back to jail to await the next film script. They really were quite excellent films – maybe a bit parochially Danish, though they did attain cult status during the final days of the unlamented German Democratic Republic that Erich Hohnecker so mismanaged.

In one of these films the Olsen-gang managed to get hold of ten million dollars in thousand-dollar bills – corrupt money from selling part of the EU butter mountain to the (then) Soviet Union. The usual, complicated set of misfortunes, led to the money being hidden from the police, the EU, the Soviets, and a rival gang in a laundromat-machine. This was duly activated by a female gang-member and the money reduced to dust (at least this time no-one else made off with it). I saw this film earlier this year during a visit to Denmark and realized that the reason money-laundering is poorly understood is that no-one actually ever witnesses money-laundering. So as a public service, here is both a story and authentic photographic evidence of money-laundering in action [the photograph is copyrighted and any attempt to use it the tabloid press will be met with the full force of the law].

In August 2005 I was asked to investigate the butterfly fauna of the most recently gazetted national park in Ghana, the Kyabobo National Park. It was a pleasure to do so. I had paid a brief visit to Kyabobo in January 1996 and caught a butterfly new to science. The moment I had it in my hand, I was sure it was new. Three weeks later in London examination of the male genitalia confirmed this in spades – it was quite different from the other two members of its genus. It was published as *Etesiolaus kyabobo* Larsen in July of that year – one of the shortest voyages from capture to formal publication that I know of.

Hein Boersma, an entomologist from the Netherlands with much African experience, had accepted an invitation to join me on the Kyabobo survey. Already, a skilled local collector, Richard Vorgas, had twice spent two weeks in the area, amassing an excellent collection under contract to the survey. We spent a few days in the northern limits of the park and then set off for the Pawa Satellite Camp in the centre of the park, where the forest was more promising than further north. We set off early in the morning to savour the ecological transition from tall-grass Guinea savannah to forest. Savour is perhaps a misnomer – during the cold early morning

the tall savannah grasses are drenched in dew and you are soon wet through. A bit more than an hour's walk takes you to savannah woodland where the grass is shorter, the dew less troublesome, and interesting butterflies become more plentiful. A further hour's walk took us to the Pawa Camp. But before that, Hein took a bad spill while crossing (for the umpteenth time) the small river we were following. I noticed this event only by a lot of laughter behind me. Hein was joking with the two wildlife staff that accompanied us. He was soaked, but unhurt. It had actually been dangerous – he had slipped on a rock and it would not have been difficult to crack his head in the fall. However, all was well ... no catastrophe, and a potential bad accident progressed from initial anxiety ... to nervous laughter ... to great fun!

Pawa camp was splendid: a small square prefab on a cement plinth. The prefab had been helicoptered in as part of a Dutch grant supporting the Wildlife Division of the Ghana Forestry Commission. I left Hein to get changed and examine whatever damage his spill might have produced, while I cased the joint. There was some nice real forest within the savannah woodland and lots of butterflies. Plenty to do for a few days. When I returned to base, there was Hein, as on the photo, rescuing his money supply: the first ever authentic photo of money-laundering in process – yet another scoop for the *Entomologists' Record and Journal of Variation.*

Money-laundering in Kyabobo – Hein Boersma and a few million cedis in Kyabobo.

One of the interesting aspects of collecting in Kyabobo is that it is very close to the German colonial town of Bismarckburg in what was then German Togoland, which included Ghana's Volta Region. German colonial officers had natural history as part of their brief and several collected butterflies. So Karsch (1893) was able to publish an excellent list of the butterflies of Bismarckburg, with more than 200 species being the most comprehensive local list published from anywhere in Africa at the time. My earlier expedition, the excellent work by Vorgas, and the present trip has now resulted in a list of 400 species and a probable total of 500 species. We missed only 25 of Karsch's butterflies, a strong indication that Kyabobo is a functioning ecosystem that has not been subject to extinction. A century of continuity in African butterfly study is very unusual. Hein was, however, disappointed that we did not catch the spectacular *Charaxes lactetinctus*, which Karsch had described from Bismarckburg: we were probably in too dense a forest for this essentially savannah butterfly.

Finally, I am pleased to report that the operation was wholly successful. Hein's freshly laundered money was able to get us an ice-cold beer two days later when we reached the first town with electricity – no eyebrows being raised.— Torben B. Larsen, UNDP Vietnam, c/o Palais des Nations, 1211 Geneva 10, Switzerland.

Eurydema ornatum (L.) (Het.: Pentatomidae) established on the Isle of Wight

Since reading of the discovery of the shieldbug *Eurydema ornatum* (L.) in Dorset (Slade et al., 2005, *Ent. Rec.* **117:** 221 – 227) I have taken care to check crucifers for this insect. While walking from Bonchurch to Ventnor on the south coast of the Isle of Wight on 20.x.2006 I noticed an unfamiliar bug on a wallflower plant, *Cheiranthus allionii*, growing at the foot of chalk cliffs. Three others were soon found on the same plant. One was teneral with yellowish markings, showing that breeding had taken place at the site. They appeared to be *Euredema ornatum*. Identification was confirmed using the key provided by Slade et al., (2005) and by reference to the commentary by Charles David and images of red and black bugs in the entomology section of the website of *La Société Guernesiaise* [www.societe.org.gg/]. It seems likely that this is an example of another insect that has recently extended its range to the UK in response to increased temperatures. Not far from the shieldbugs, I found a nest aggregation of the bee *Colletes hederae* Schmidt & Westrich. Another nest aggregation was found at Castle Cove west of Ventnor and there were numbers of Harlequin Ladybird, *Harmonia axyridis* (Pallas) squashed on the footpath between Ventnor and Castle Cove. I regularly work these localities for insects so I am reasonably confident that all three species are recent colonists.— JOHN PAUL, Downsflint, High Street, Upper Beeding, West Sussex BN44 3WN.

Crocallis dardoinaria Donz. (Geometridae), the Dusky Scalloped Oak and *Diarsia dahlii* Hb. (Noctuidae), the Barred Chestnut: Two new moths for Devon

A specimen of *Crocallis dardoinaria* was taken at light at Exmouth by Dave Walls, a member of Devon Moth Group, on National Moth Night, 23 September 2006. This is not only a first for Devon, but also the first example for the UK mainland. The specimen is in the collection of Peter Baker.

The first Devon record of *Diarsia dahlii* to be supported by a voucher specimen was made by Dave Paull and Steve Hatch, at Watersmeet, when one was taken at light – also on 23 September 2006. There are some early records of this species in Devon, going back to 1890, but these are unclear with regard to exact capture date and whether the specimens were kept. This find will lead to further investigations of this most interesting spot in Devon. The specimen and genitalia slide are in my collection.— ROY MCCORMICK, 36 Paradise Road, Teignmouth, Devon TQ14 8NR.

An additional larval food-plant for *Sphinx ligustri* L. Privet Hawk-moth (Lep.: Sphingidae)

On 31 August 2006, a larva of *Sphinx ligustri* L., the Privet Hawk-moth, was observed feeding on white-flowered *Buddleja davidii* by David Manning, the Bedfordshire County Micro-moth Recorder, in his garden in Sharnbrook, Bedfordshire. Having undertaken a reasonably thorough literature search I am fairly certain that this is a previously unrecorded food-plant for the species. The following texts have been searched for references: Danahar, G. W. & Northfield, R. G. W.,

1994. Foodplants of the Privet Hawkmoth, *Sphinx ligustri* Linn. (Lep.: Sphingidae): An experimental study. *Ent. Rec.* **106**: 47-50; Heath, J. & Emmet, A. M. (Eds), 1983. *The Moths and Butterflies of Great Britain and Ireland* Volume **9**. Harley Books; Lempke, B. J., 1978. Caterpillars Feeding on *Buddleja davidii* Franch. *Ent. Rec.* **90**: 252; Owen, D. F., 1977. Insect Fauna of *Buddleia davidii*. *Ent. Rec.* **89**: 344; Pittaway, A. R., 1993. *The Hawkmoths of the Western Paleartic*. Harley Books; Porter, J., 1997. *The colour identification guide to Caterpillars of the British Isles*. Viking; Skinner, B., 1998. *The colour identification guide to Moths of the British Isles* (Second Edition). Viking and Waring, P., Townsend, M. & Lewington, R., 2003. *Field Guide to the Moths of Great Britain and Ireland*. British Wildlife Publishing. The following websites were also examined: *http://www.leps.it/*; *http://www.nhm.ac.uk/research-curation/projects/hostplants/*; *http://tpittaway.tripod.com/sphinx/* and *http://www.nic.funet.fi/pub/sci/bio/life/insecta/*. Tony Pittaway (pers. comm.) confirms that this is the first record of *S. ligustri* feeding on *B. davidii* that he is aware of; however, in such a polyphagous species this is not a surprise and he suspects if *S. ligustri* is actively looked for on *B. davidii* many more would be found.— LESLIE J. HILL, 3 Shaggs Cottages, East Lulworth, Dorset BH20 5QP.

Mythimna vitellina (Hb.) The Delicate and *Trichoplusia ni* (Hb.) Ni Moth (Lep.: Noctuidae): new to Bedfordshire

A single Delicate *Mythimna vitellina* was taken at light on the night of 4 September 2006 in Eaton Ford, Bedfordshire by Tony Lawrence. Also taken at light, on the night of 17 September 2006 in Potton, was a single Ni Moth *Trichoplusia ni*. Jeremy Lindsell, the captor, only started moth recording during July this year. To the best of my knowledge, both migrant species are new Bedfordshire (VC 30) in this most satisfactory migrant year.— LESLIE J. HILL, 3 Shaggs Cottages, East Lulworth, Dorset BH20 5QP.

CORRIGENDA

The following corrections to items in the current volume have been notified to the Editor:

p. 201 The statement that *Etiella zinckenella* (Tr.) had not been illustrated in the British entomological literature is incorrect, since the 1995 Christchurch example was illustrated in *Atropos* number 3, plate 1, Figure 15. I am grateful to Mark Tunmore, the Editor of *Atropos* for pointing this out to me and I should point out that the error is an editorial *faux pas*, and not that of the author of the article.

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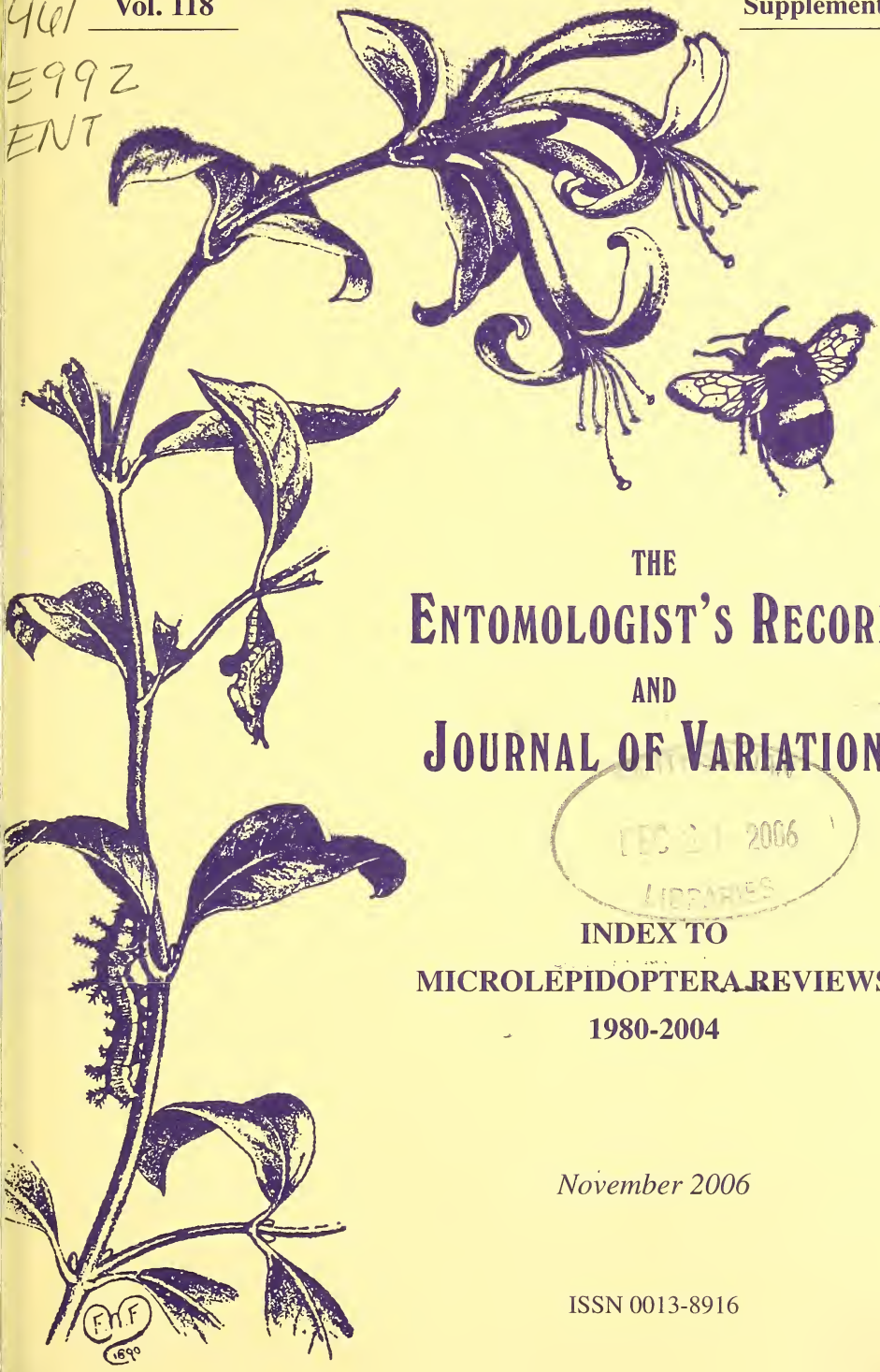

THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

INDEX TO MICROLEPIDOPTERA REVIEWS 1980-2004

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Entomologist's Record & Journal of Variation.

INDEX TO MICROLEPIDOPTERA REVIEWS

1980 – 2004

DAVID AGASSIZ

23 St James's Road, Gravsend, Kent DA11 0HF

(E-mail: dagassiz@tiscali.co.uk)

Abstract

An index to the taxa included in the annual *Reviews of Microlepidoptera* published in this journal for the years from 1980 to 2004 is presented.

Introduction

There have now been published 25 annual Reviews of Microlepidoptera since Michael Chalmers-Hunt invited me to initiate this in 1980. This series, now ably continued by John Langmaid and Mark Young, aims to bring together the information about our microlepidoptera each year, containing information both published and unpublished about their distribution, biology and other matters of interest.

Now that a considerable time has elapsed I find that often I cannot remember in which year a new species was discovered, or else I wish to know whether there is any information about a given species not included in textbooks. To search through all the past annual reviews is tedious and time consuming. In case others are faced with the same problems I have prepared an index so that such information can more quickly be traced, provided readers have access to a set of the *Entomologist's Record* or reprints therefrom.

The index includes 7000 entries, which means many more than 7000 records since each entry is a page reference and that can sometimes mean more than ten new vice-county records. This pays tribute to the contributions from recorders up and down the country, and it contains records for nearly 1500 names (even though some are synonyms). This is the vast majority of the British Microleopidoptera and includes 84 species new to the British Isles of which 61 are probably resident or likely to be repeated, the remainder being adventives.

During this period there have been a considerable number of name changes. Each name is indexed as it was published, but where that name is superseded reference is given to the current name. Under the current name synonyms used are also given. Variant endings of names and typographical errors have been ignored and authors' names are omitted. Where a species has been placed in a different genus or genera the others used are placed in brackets; this is not intended to imply that such names are subgenera. Under the name currently in use each reference is given, but for synonyms only the uses of that name are listed with "but see the current name".

Reference is made to the volume and page of each entry, since the year and volume do not always relate in the same way. For ease of reference the volumes containing the reviews for each year are given in the table below:

Year	Volume	Year	Volume	Year	Volume
1980	93	1988	102	1996	110
1981	94	1989	103	1997&98	111
1982	95	1990	104	1999	112
1983	96	1991	105	2000	113
1984	97	1992	106	2001	114
1985	99	1993	107	2002	115
1986	100	1994	108	2003	116
1987	101	1995	109	2004	117

Names of species are entered in alphabetical order, genera are not listed separately. If anyone wishes to have the index in systematic order it can be supplied as an electronic file in Excel format by email from the author. Whilst every effort has been made to eliminate errors there are bound to be some overlooked, advice of these will be welcomed.

Acknowledgements

Thanks are due to the following for checking and assistance: John Langmaid, Ian Thirlwell, Mark Young and Wendy Wilson.

Index

Volume numbers are printed in bold type and are separated by a colon from the page numbers in that volume, printed in normal type.

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Editor
C.W. PLANT, B.Sc., F.R.E.S.
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Telephone/Facsimile: 01279 507697 E-mail: cpauk1@ntlworld.com

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