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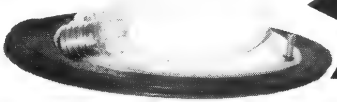

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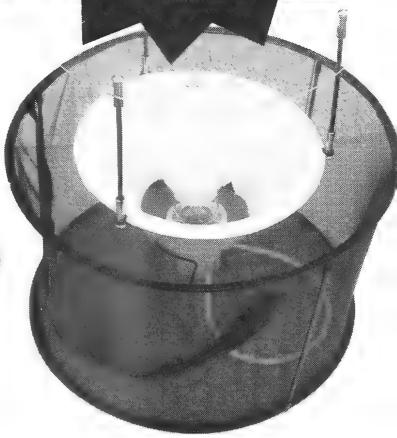

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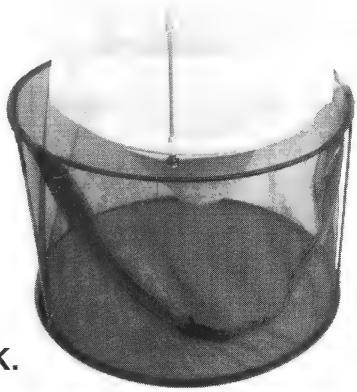

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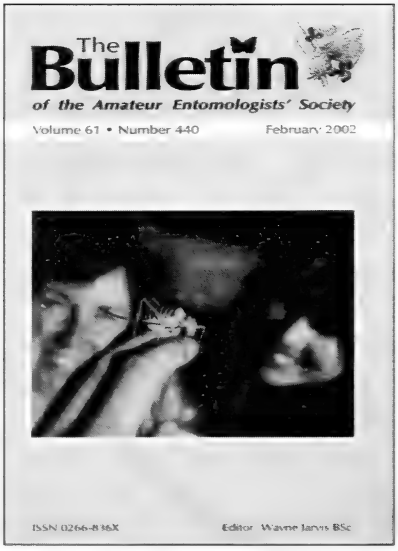

Photo: Peter Sutton.

The cover of the *Bulletin* features a Saddle-backed bush cricket, *Ephippiger ephippiger* and admirers.

The **Bulletin**
of the Amateur Entomologists' Society

Volume 61 • Number 440 February 2002

From The Registrar

Data Protection Act – In order to fulfil the requirements of this act I must advise members of the details held on computer database and the use made of them.

Currently the information we hold comprises – name, address, telephone number, email address, date of birth, interests, payments made, and membership category. Additional information is held regarding mailing details. If any member objects to these details being held, would they please get in touch with me.

The information is used for the following purposes:-

To prepare mailing labels for the *Bulletin* and *Bug Club Newsletter*. Also labels for other mailings as required.

For the preparation of statistics for use by the Council.

The publication of Membership Lists. These will only include details of name, address, interests, and, in the case of Junior Members, the Membership Class. Please note that telephone numbers and e-mail address are ONLY passed on to Council and Committee members when a specific request is made. Such details are not passed to other members. Individual members may request specific lists, such as names and addresses of members in a specific area, with or without interests included. A minimum charge of £1.50 is made to cover the additional costs of stationery and postage involved.

Membership List – it is now possible to produce a Membership List whenever one is required and it is hoped to produce one as soon as adequate funds are available (production costs in the region of £2,000). It should include an alphabetical list of names and addresses. It is should also include a list of members' names under specific interests, and members' names in individual countries and UK counties. (It is for the latter reason that county name is always included in the address, despite it not being essential in most cases.) The restriction to only three named interests is to make the interest lists manageable, since these will help members communicate with others of similar main interest areas.

Change of Address – the mailing labels are produced a month in advance in order to notify the printer as to how many of each publication need be printed and to allow sufficient time for the envelopes to be prepared. (This is a more tedious task than previously because there are at least three different categories of mailing – *Bulletin* alone, *Bulletin* plus *Bug Club Magazine* together (for family membership), and *Bug Club Magazine* alone. These are further separated into Overseas and UK.) This can mean that if I am notified of the change of address AFTER the mailing labels are produced, then it will go to the previous address and there is **no way of preventing this**. It also means that if a redirected envelope is used to notify change of address, by the time I receive it via the PO Box, which can take up to four weeks, or even more, the next mailing label will also have been produced for the previous address! It is therefore in members' interests to notify me as to the new address, and the date for which it becomes effective, as soon as possible after the details are known to the member. Members may notify me directly to my home address, if they wish – Nick Holford, 5 Conifers Close, HORSHAM, West Sussex, RH12 4QH. I can also be contacted by email (nick@fivecon.force9.co.uk) In notifying change of address, please be certain to include your membership number, which is printed after the name on the mailing label. This makes finding your record much easier. On one occasion I had a member notify me of change of name on marriage, change of address but omitting to give me the previous name nor the previous address. I eventually managed to trace the record by using the member's initials, though this did take quite a time! Without the computer database, it would have been more or less impossible.

First names – I am trying to make communications more personal by using first names. This is already done in most cases. Please try to remember to write it onto the renewal slip before sending it in.

Payment by cheque – when paying by cheque, if the members family name is different from that on the cheque, please write the member's name on the back as this helps considerably when checking that payments have been entered correctly. It would be helpful if the membership number was written on the back as a matter of course. PLEASE do not staple cheques to the form, these require a considerable amount of time to remove, and when dealing with about 1400 cheques in the space of two months, any saving in time is a great boon! Thank you.

Orthopteroid Insects in Southern France

by Peter Sutton (5849)

94 Evesham Road, Rowley Fields, Leicester LE3 2BD.

Introduction

In Britain, we have a relatively impoverished orthopteran fauna. This situation can be explained firstly, by the fact that the influx of continental species from mainland Europe was stopped abruptly by the post-glacial sea level rise that isolated the British Isles from mainland Europe between 12,000 and 8,000 years ago, and secondly, by the fact that the British Isles represents the northern (or strictly speaking, north-western – some species are found at more northerly latitudes in mainland Europe) limit of their natural range. Indeed, the majority of native British species reside in suitable habitat in southern England and Wales. Mainland Europe, by comparison, is endowed with a very rich orthopteran fauna, and several species recorded from the French Mediterranean region are described in this article.

By way of digression, it is interesting to note that orthopteran species at the northern limit of their range invariably occupy smaller ecological niches, *i.e.* have more stringent habitat requirements than they do at more southerly latitudes. This becomes particularly significant when conserving and maintaining habitat for rare and localised British species, and the same significance is exemplified in the lepidopteran world by observing the relative ease with which southern heathland populations of the Silver-studded blue, *Plebejus argus,* can be conserved with respect to those in more northerly locations.

To add further interest, in recent years it has become clear that populations of formerly rare and uncommon species of Orthoptera have been expanding their natural range in the British Isles, and this observation, coupled with records of the earlier annual emergence and maturation of British species, provides compelling evidence that we are experiencing a period of climatic warming. It is probable that the impressive rate at which certain species of Orthoptera have increased their range in Britain arises from the climate-induced "broadening" of their ecological niche, thereby allowing them to exploit formerly inaccessible habitats.

In this story of climatic amelioration, we have entered a period of remarkable change, and when viewing the range expansions of species in continental Europe, it is interesting to contemplate the possibility of the migration of non-native species to the British mainland. At present,

it appears that as soon as there is speculation about the possible arrival of a new species in Britain, it is promptly discovered! The most noteworthy discoveries include the appearance of colonies of the Small red-eyed damselfly, *Erythromma viridulum,* in Essex and the Isle of Wight, and the discovery of the Southern oak bush-cricket, *Meconema meridionale,* in Surrey. The temporary existence of the Queen of Spain fritillary, *Issoria lathonia,* at Minsmere in Suffolk, and the establishment of breeding populations of the Red-veined darter, *Sympetrum fonscolombei,* and Lesser emperor, *Anax parthenope,* in Cornwall are also important examples.

In terms of using Orthoptera as indicators of climatic change, the current dynamic situation in the British Isles is of great interest. A similar level of interest has been taken by our European colleagues who have been monitoring the spread of certain species of Orthoptera, and this has provided a useful forum for the exchange of information between British and European groups.

Orthoptera in France

For the British orthopterist, the Orthoptera of continental Europe offer a natural and enjoyable progression from the study of our native fauna, and the orthopteran fauna of France is without doubt, the best place to start. France is a magnificent country for the naturalist, and contains some of the most fantastic scenery in Europe, from the colourful alpine meadows of the Alps and the green forests of Fontainebleau (to the south of Paris), to that jewel on the Mediterranean, the flamingo-graced wetlands of the Camargue.

I was first introduced to the Orthoptera of France during the European Orthoptera conference in Normandy in 1999, the agenda of which, (in addition to consuming the excellent food and drink which always accompanies any French event), included trips to some very rewarding sites within the Parc Regional de Brotonne and the picturesque Seine valley to the east of Le Havre. Species encountered on these trips included the Large marsh grasshopper, *Stethophyma grossum*, the Sickle-bearing bush-cricket, *Phaneroptera falcata*, the Italian cricket, *Oecanthus pellucens* and the Blue-winged grasshopper, *Oedipoda caerulescens*. A year later, I went with several friends to explore the coastal region between Calais and Dieppe. At one site, on dunes at Ambleteuse, we found the Lesser mottled grasshopper, *Stenobothrus stigmaticus* (which, in the British Isles, is confined to one site on the Isle of Man), as well as that possible candidate for UK

colonisation, the Bow-winged grasshopper, *Chorthippus biguttulus.* (This species, as was almost certainly the case for the newly discovered Southern oak bush-cricket colonies, will probably arrive on the British mainland as a result of unintentional human assistance, *e.g.* holiday caravans *etc.*)

The Downland south of Calais was fairly productive, and our French companion was very excited to see his first record of Roesel's bush-cricket, *Metrioptera roeselii,* from the site, which I had found singing at the bottom of a twelve-foot deep bomb crater. (In contrast to our own remaining areas of pristine Downland, the French Downs are well and truly pock-marked with bomb craters and disused bunkers).

At another dune site in the Baie de Somme (Parc ornithologique du Marquenterre), we found a variety of Orthoptera including Cepero's ground-hopper, *Tetrix ceperoi.* The site, obviously famed for its birdlife, also included many other pleasant surprises such as the Natterjack toad, *Bufo calamita,* some huge examples of the European tree frog, *Hyla arborea,* the Northern dune tiger beetle, *Cicindela hybrida,* and the Wasp spider, *Argiope bruennichi.* For those who may be interested, the wildlife-rich area of the Baie de Somme is part of an Anglo-French initiative known as the "Two Bays Project". Its English counterpart is the Rye Bay area in Sussex, which has a great deal in common with the French site in terms of habitat and species. Both sites are characterised by areas of shingle, sand dunes, saltmarsh, brackish and freshwater habitats, reedbeds, grazing marsh and woodland. The primary objective of the project is to compare the wildlife and habitats of the two bays with a view to improving management techniques for the rare species and habitats. Further details of this project, (which is funded by East Sussex County Council and the European Community European Regional Development Fund through INTERREG II), and the wealth of wildlife to be found at these sites, can be found at the Rye Harbour web site: www.yates.clara.net/2bays.html.

In August 2001, the International Conference on Orthopteroid Insects was being held in Montpellier, and this provided the perfect opportunity to search for Orthoptera in southern France. Prior to the beginning of the Conference, and en-route from Marseille airport, I met up with friends; the Hobbs' and the Richardson's, and we stayed in a small village to the North of the Crau desert region at St.Martin de Crau. The Crau desert (Plaine de la Crau) is an area of stony desert which, surprisingly, flanks the eastern end of the Camargue wetlands on the French Mediterranean coast. This desert is a special conservation area

and contains the extremely rare and legally protected grasshopper, *Prionotropis rhodanica*. This large species, which is perfectly camouflaged in the stony desert, looks like a cross between a locust and a ground-hopper (it also looks like the insect equivalent of a muscle-bound bulldog), and is extremely susceptible to environmental change. (This endemic species was lost from some areas of the Plaine de la Crau which were irrigated and planted with fruit trees prior to protective legislation.) *Prionotropis hystix*, the equally rare and protected (and extremely similar) cousin of *rhodanica* is also confined to intensely arid habitat in France. It will be interesting to see if these and other protected species in France and other countries (most notably Spain) will undergo a reversal of fortune as certain areas on the northern Mediterranean coast succumb to continued desertification.

In the evening, Ralph Hobbs and I searched the area around the villa by torchlight, and found the brown and green forms of the Large cone-head, *Ruspolia nitidula*, and a Stripeless tree frog, *Hyla meridionalis*, which had made its way into the villa. Other uninvited guests included the leggy centipede *Scutigera coleoptrata*, which caused some commotion among the female members of the party prior to its removal. The following morning, only the green form of the Large cone-head could be located (Plate 02A), but other species such as the Slender blue-winged grasshopper, *Sphingonotus caerulans*, and the Blue-winged grasshopper, *Oedipoda caerulescans*, were encountered. A Lesser purple emperor butterfly, *Apatura ilia*, imbibed nutrients from the wet soil adjacent to a pond as we drank plenty of water in preparation for our foray into the Crau desert region. I visited the Crau desert with Ralph Hobbs and Ian Richardson and we searched in vain (albeit a bit late in the season) for *Prionotropis rhodanica*. The stony desert was an inhospitable oven and devoid of all vegetation except for a few localised patches of parched thorny scrub, which made it impossible to kneel on its surface and photograph the surprisingly abundant insect life. Luckily I had a foam camping mat rolled up in the car, which provided a comfortable solution to the problem, (but was inevitably returned to the boot possessing more perforations than a teabag). It was desperately hot, but our discomfort was soon forgotten as we observed an amazing display with each and every step. Bright flashes of colour appeared in front of us as a variety of blue, red and yellow-winged grasshoppers took to the wing, only to disappear again as they landed and vanished into the fabric of the desert. One of these species was the large *Oedaleus decorus* (Plate 02B), which (in the absence of an English name) I am tempted to call the "Citron-winged

grasshopper" on account of its lemon-green flash colouration. This locust-like species is an agricultural pest in some areas, but appears to be perfectly at home in the arid habitat. (I was also surprised to learn that our own Lesser marsh grasshopper, *Chorthippus albomarginatus,* is an agricultural pest in some eastern European countries.)

A strange and ungainly large fluttering insect that took to the air turned out to be a brown form of the Praying mantis *Mantis religiosa* (Plate 02C), and other grasshoppers at the site included *Euchorthippus chopardi* and *Caliptamus barbarus.*

The journey to the villa in the village of Mireval, south of Montpellier, took us through the beautiful scenery of the Camargue, and we stopped by one of the shallow shimmering lakes to look at the flamingoes, silhouetted against the bright sunlight. Green frogs splashed into the water as we walked along a well-weeded dyke, triggering a Pike, that green freshwater wolf, to torpedo forward from its shadowy lair and snare a luckless amphibian in its toothy duckbill. Several specimens of the vibrant and almost fluorescent orange-red dragonfly *Crocothemis erythraea* flew up and down the dyke in front of us as we admired the view.

We stayed at the villa in Mireval for the duration of the Orthoptera Conference. The village of Mireval overlooks more of the shallow coastal lagoons which characterise the region, and these lagoons were also surrounded by extensive dune habitat. In the village, there seemed to be fruit trees in every garden, and in the villa garden a pomegranate tree proudly displayed its ripe orange fruits. Further along the road, there was a fig tree, which was so heavily laden with ripe fruit that the path below was covered in insects gorging themselves on the over-ripe casualties. It was from this fig tree, that I first heard the rasping "Ti-zi...Ti-zi..." chirp of a Saddle-backed bush-cricket, *Ephippiger ephippiger*, and at the same site, Ralph and I searched for crickets that chirped on the bare ground beneath the trees in the evening. These turned out to be the southern relative of the Field cricket *Gryllus campestris*, the Two-spotted cricket, *Gryllus bimaculatus* (Plate 02D). The specimen shown was the second insect that I photographed. The first attempt was a complete disaster. Having just about lined up a shot after the usual rigmarole of trying to get the thing to sit still, it promptly, and to my complete surprise, flew off into a bush never to be seen again.

The foothills of Montagne de Gardiole to the south-west of Mireval proved to be very productive and full of surprises, the first of which

was a patch of exploding cucumber plants that I had stumbled across. At the slightest disturbance, the highly pressurised fruits broke from their stems and squirted a high-velocity jet of seeds several feet into the air, which was probably not as high as I jumped the first time it happened. We found the pupal husks of the largest and loudest European Cicada, *Tibicen plebejus*, and a 45mm sun-dried specimen of the huge and impressive timberman, *Cerambyx cerdo*. Among the grass stems we found an extraordinary little cricket from the sub-family Mogoplistinae, *Arachnocephalus vestitus* (Plate 02E). The only European text that describes this species, is that of Bellmann and Luquet (1995), who give a description and brief details of its European distribution. It would be interesting to know the function of the small fine spines that cover the legs and body of this species and something of its habits and life history. The brown form of the Slender bush-cricket, *Tylopsis lilifolia,* was also present at the site. Some green examples of the Praying mantis, *Mantis religiosa,* adults were discovered among the vegetation, and were probably waiting for the chance to catch the Bath whites, *Pontia daplidice,* and Spotted fritillaries, *Melitaea didyma*, or even the Great banded graylings, *Brintesia circe,* that were nectaring on the scrubby slope. Other mantids present at the site were *Empusa pennata*, with its cone-like crest (Plate 02F) (this species is replaced by *Empusa fasciata* in eastern Europe), and *Ameles decolor*, a small brown species. We came across the large spider *Argiope lobata*, with its strange shaped abdomen, and a superb specimen of the Wasp spider, *Argiope bruennichi*, with its striking black, yellow and white markings. This latter species, formerly a rarity in the British Isles, has significantly increased its range in the southern counties of England over the past two decades. Before leaving the site, we found a nest of juvenile Montpellier snakes, *Malpolon monspessulanus*. Three were basking in the sunlight around a small hole, which was the entrance to the deep burrow, and they were surrounded by several whole sloughed skins. I tried to get some photographs but after scaring them into the hole, and in spite of repeated searches, we never saw them again!

The next few days were spent attending the conference, and there was a good turn-out from the British contingent. As usual, the food was exceptionally good, as was the wine, and after every three course lunch, we struggled to stay awake during the afternoon sessions. Each morning Ralph and I managed to get lost between Mireval and Montpellier, and to cap the slapstick routine, one morning, after a flash flood had punctuated the otherwise perfect weather, I opened the car

window in the wrong place at the wrong time. A tidal wave of water surged into the car as we passed a lorry going through a large puddle, and as per any good Laurel and Hardy film, I was half-expecting a fish to appear as I ejected a mouthful of muddy water. This was closely followed by a period of uncontrolled laughter from the other occupants of the car. Each morning at the villa began with a communal breakfast in the garden, and this became a much more relaxed affair when the conference had finished. There were supposedly Red squirrels in the garden, and Turkish geckos, *Hemidactylus turcicus,* ran along the walls at dusk. Firebugs, *Pyrrhocoris apterus,* congregated at the bases of trees, and by the side of a well, a line of small Myrmelionid Ant-lion larval pits followed its circumference.

We visited the wetlands on several occasions to watch the Pink flamingoes, white Egrets and elegant Avocets wading in the shallow pools and lakes, and also visited the sand dune habitat at Palavas-les-Flots. Whilst walking the dunes we had to tread carefully, and I shall say no more than that certain popular beaches in the south of France provide an abundant habitat for *Scarabaeus semipunctatus.* Among the dunes were the beautiful flowers of the Sea daffodil, *Pancratium maritimum.* This is the same flower that Gerald Durrell describes in his book, *My family and other animals,* and for the presence of which he christens Lake Antiniotissa in the north-east corner of Corfu "The Lake of Lilies". Durrell writes: "The smooth curve of the dune that ran between the bay and the lake was the only place on the island where these sand lilies grew, strange, misshapen bulbs buried in the sand, that once a year sent up thick green leaves and white flowers above the surface, so that the dune became a glacier of flowers." Further into the dune system we disturbed a large Migratory locust, *Locusta migratoria,* which took off with clattering wings and landed twenty or so yards away. Somehow we managed to find it and take photographs. It was an adult in the brown gregarious phase, which is apparently rarely seen in Europe. The site we were visiting turned out to be a known European breeding site for this species. (We later found an example of the more typical green solitary phase – an approx. 4th instar nymph in a field near Mireval.) The highlights of the trip were the discovery of the longhorn beetle, *Chlorophorus varius,* on an umbellifer, and a specimen of the Sand bush-cricket, *Platycleis sabulosa.* The sand dunes at Mas des Dunes near Frontignan produced the spectacular White-faced bush-cricket, *Decticus albifrons,* (Plate 02G), a bulky insect which is even larger than our own Wartbiter, *Decticus verrucivorus,* and a specimen of the Tawny earwig, *Labidura riparia,* was found in the wetter areas

of sand around one of the lagoons. (The Tawny earwig has long been thought to have disappeared from the British Isles, but it could still be present, particularly in the light of the almost certain discovery of this species at Branscombe beach in Devon in the 1980's. It is a highly elusive insect, and if any lessons are to be learnt from the Northern scaly cricket, *Pseudomogoplistes vicentae,* discoveries, I suspect that its rediscovery may require nothing more than a very large slice of luck when selecting a suitable site, and the correct trapping technique.)

Throughout our time in the South of France, we had been very keen to locate the unmistakable and rare *Saga pedo*, and during one discussion at a conference dinner, we were told that we might find it on the plateau at Cardonnet to the west of Pignan. *Saga pedo* is a colossal insect, one of the largest in Europe, and feeds on other bush-crickets and grasshoppers. Females can reach almost 10cm long (including ovipositor), this species captures its prey by locking it into a vice-like grip with its spiny forelegs.

We drove to the site which was predominantly open grassland with bushes and trees. There were large butterflies flying around and resting in the trees, and we managed to get a closer view. They were magnificent Two-tailed pashas, *Charaxes jasius*, and complete masters of the air, swooping and soaring at great speed, and using the slightest breath of wind to sail around the tree without so much as a wing beat.

We also found the largest European centipede *Scolopendra cingulatus*, which can reach a length of 9cm. The modified poison claws which surround the head of this species can deliver a very painful and potentially dangerous bite.

We found some more specimens of the Saddle-backed bush-cricket (Plate 02H), but not our intended quarry. As with *Prionotropis*, it appeared that we were too late in the year to find *Saga*, but at least it left something to look forward to for the next trip to southern France. Ralph and I dropped the two families off at Marseille airport, and drove across country to meet up with Roger Hawkins in the Gorges du Tarn region, but that's another story.

References

Bellmann, H. and Luquet, G., (1995), *Guide des Sauterelles, Grillons et Criquets d'Europe occidentalle*, Delachaux et Niestlé, Paris.

Insects of Conservation Importance on RSPB Reserves

by Peter Sutton (5849)

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Introduction

Nature reserves managed by the Royal Society for the Protection of Birds (RSPB) provide a valuable refuge for many rare, threatened and endangered species of plant and animal in the United Kingdom, and 450 Red Data and over 1000 Nationally Notable/Scarce species have been recorded on RSPB reserves since 1970. Significantly, 130 of these species are Biodiversity Action Plan (BAP) Priority Species, which constitute just over one fifth of the total UK Biodiversity Action Plan (Cadbury, 1999 and recent amendments).

Many of the species in the above categories are non-avian. The RSPB has been recording non-avian biodiversity as part of a five year Biodiversity Recording Programme which began in 1996. Since recording began, a total of 67 non-avian BAP Priority Species have been recorded on RSPB nature reserves, and almost half of these species have been systematically surveyed on these reserves.

By 1998, a total of 73 RSPB reserves had contributed data to the recording programme. This data was collected primarily by RSPB reserve staff and volunteers, but a major contribution was also made by specialists. In 1999, a report entitled *"The Recording of Non-avian Biodiversity Species of Conservation Importance at RSPB Nature Reserves"* (Cadbury, 1999) was compiled by James Cadbury, which provided an interim assessment of the progress of the recording programme. This was followed by a further report in 2001 entitled *"Biodiversity Monitoring Programme at RSPB Nature Reserves in 1999"* by James Cadbury, Matt Shardlow and Mark Gurney (Cadbury, Shardlow and Gurney, 2001). These reports have provided valuable information regarding the status and observed population trends for a variety of species, and have also allowed any gaps in the accumulated knowledge to be addressed. In addition, the reports provide a list of "highlights" which explain the significance and status of some of the rarer flora and fauna to be found on the reserves, and a group by group analysis of species of conservation importance (from plants and fungi, through invertebrates, to vertebrates). Of particular interest to entomologists are the significant number of insect species of conservation importance

found on RSPB reserves, and a summary of these species is provided below:

Insects of Conservation Importance on RSPB Reserves

Odonata (Dragonflies)

The rare migrant species, the **Red-veined darter**, *Sympetrum fonscolombei*[1] and the **Yellow-winged darter**, *Sympetrum flaveolum* have both bred on RSPB reserves since the recording programme began. The large influx of the latter species in 1995 led to breeding, and the emergence of adults was recorded in 1997 and 1999.

The **Vagrant darter**, *S. vulgatum* was recorded at Dungeness in 1995.

The **Scarce emerald damselfly**, *Lestes dryas* (RDB2), is now well established in Kent and appears to be extending its range.

The very rare vagrant, the **Lesser emperor dragonfly**, *Anax parthenope* has now proved to have bred in Cornwall and shows signs of becoming established at Dungeness.

The **Norfolk hawker**, *Aeshna isosceles* (RDB1, BAP Conservation Concern) is confined to the Norfolk Broads where it is associated with drainage ditches containing the Water soldier *Stratiotes aloides*. 97 exuviae were counted at Strumpshaw Fen in 1999.

The **Hairy dragonfly**, *Brachytron pratense* (Notable b) has been recorded from a number of reserves in England *e.g.* Dungeness and Wales *e.g.* Anglesey.

The **Scarce chaser**, *Libellula fulva* (RDB3, BAP Conservation Concern) has been recorded in Norfolk in the vicinity of the Mid-Yare RSPB reserve, but as yet, there are no confirmed breeding records on RSPB reserves.

The **White-faced darter**, *Leucorrhinia dubia* (Notable a, BAP Conservation Concern) has been recorded in Scotland at Loch Carn Bingally.

The **Small red damselfly**, *Ceriagrion tenellum* (Notable b) is present in good numbers at Grange Heath in Dorset, and has recently colonised Ynys-hir in Dyfed.

Species Focus:

The Southern damselfly, *Coenagrion mercuriale* (Plate 02I)

The Southern damselfly *Coenagrion mercuriale* (RDB3, BAP Priority) is the smallest of the five British *Coenagrion* species, and takes it's scientific

[1] Cadbury and the authors of the current Dragonfly Atlas (Merritt *et el.*, 1997) use *fonscolombii*. In accordance with all other texts, *e.g.* Askew, McGeeney, Hammond etc., *fonscolombei* is used here.

name from the "mercury" mark on segment two of the abdomen of the male.

This species is recorded from only 26 ten-kilometre squares in England and Wales, and the important population on the East Devon Pebblebed Heaths has been growing steadily since it reached a critically low level in 1991 (Devon BAP, 2000). This species has very exacting habitat requirements, and is found in shallow, slow flowing, well-vegetated, base-rich streams and runnels with shallow peat/sediment layers. (These habitats are generally found on slightly acid substrates.) It is hoped that the Biodiversity Action Plan (BAP) currently in place for this species will provide the information required to correctly manage and safeguard UK sites, and hopefully culminate in a successful re-introduction programme.

The Southern damselfly is the only British species of Odonata to be listed in the European Communities "Habitats and Species Directive", and in the Appendices of the Bern Convention (Merritt *et al.*, 1997). It is estimated that the UK holds 25% of the global population.

Internationally, the Southern damselfly is believed to be at risk from extinction, and for this reason, one of the qualifying criteria for choosing proposed Special Areas of Conservation (SAC) in the UK is the presence of this species.

The revival of this globally threatened species at Aylesbeare Common reserve in Devon has been attributed to the use of cattle to graze and trample the base-rich Black bog rush *Shoenus nigricans* mire, thereby keeping open the runnels in which the damselfly breeds.

Neuroptera (Lacewings and Allies)

The **Ant-lion**, *Euroleon nostras* (Provisional RDBK) has been recorded at Minsmere since 1994. This species, which was recognised as a breeding resident in 1996, is confined to the Suffolk Sandlings. It is estimated that 90% of the British population is held on RSPB reserves.

Orthoptera (Grasshoppers and Crickets)

The **Long-winged conehead**, *Conocephalus discolor* (Notable a) and **Roesel's bush-cricket**, *Metrioptera roeselii* (Notable b) are both found on RSPB reserves, but in the light of extensive UK population expansions, both species should not now be considered of conservation concern and their Notable status removed.

The Bog bush-cricket, *Metrioptera brachyptera* (Notable b, Plate 02J) has been recorded in small numbers on the Ynis-hir reserve in Dyfed.

The Bog bush-cricket is a characteristic species of moist lowland heath (which is itself a Priority UK BAP and potential SAC habitat), typically occurring in areas where Purple moor grass *Molinea caerulea* and Cross-leaved heath *Erica tetralix* are present. The picture of this species in Plate 02J shows a female of the rare and seldom seen macropterous form, *Metrioptera brachyptera* f. *marginata* Thunberg.

Cepero's ground-hopper, *Tetrix ceperoi* (Notable a) has been regularly recorded around the damp margins of flooded gravel pits at Dungeness.

Lepidoptera

Butterflies

The **Swallowtail**, *Papilio machaon* (RDB2, BAP Conservation Concern) has been recorded three times at North Warren in Suffolk, where the sightings are assumed to be of wandering immigrants. The species is resident at Strumpshaw Fen in the Mid-Yare Valley reserve, where 78 larvae were recorded in 1999.

A search for the eggs of the **Brown hairstreak**, *Thecla betulae* (Notable b, BAP Conservation Concern) revealed that this species is present at Otmoor in Oxfordshire and West Sedgemoor in Somerset.

The **White letter hairstreak**, *Strymonidia w-album* (Notable b) has been recorded in low numbers at Otmoor, Pulborough Brooks in West Sussex, and Northward Hill in Kent.

The **Silver-studded blue**, *Plebejus argus* (Notable b, BAP priority) is a well studied butterfly on RSPB reserves and surveys show that there can be appreciable population increases when the correct habitat management regime is applied. At Grange Heath in Dorset, the number of colonies was increased from 5 in 1997 to 14 in 1999 after a programme of scrub clearance and grazing was applied to the site. This species was re-introduced to Aldringham Walks reserve on the Suffolk Sandlings in 1998, and over 60 adults were present on the site in 2000.

The **Northern brown argus**, *Aricia artaxerxes* (Notable b, BAP Priority) is still present in Lancashire, and has been monitored on ITE butterfly monitoring transects at Leighton Moss since 1979, and at Wharton Crag since 1988.

The UK has 432 colonies of Marsh fritillary and represents the European stronghold for this threatened species. It is protected under Annex II of the EC Species and Habitats Directive, the Bern Convention, and Schedule 5 of the WCA (1981). Like the Southern damselfly, the presence of this species can influence the selection of SAC's, which in this case are the West Devon Culm Grasslands. Devon is a stronghold for the Marsh fritillary and has 85 of the 432 confirmed colonies (Devon BAP, 1999), 25 % of which are on SSSI's.

The Marsh fritillary is the most colourful of the British fritillaries (Plate 02K) with red/orange and yellow markings set against the brown chequered wing patterns. It feeds on Devil's-bit scabious *Succisa pratensis* but on calcareous grassland, it also uses Field scabious *Knautia arvensis* and Small scabious *Scabiosa columbaria.* (This species appears to have colonised calcareous grassland early in the twentieth century, and these colonies, together with new colonies found on Dartmoor, have provided a small ray of light to this overall dismal picture of decline.)

One of the problems associated with the conservation of this species is it's requirement for relatively large areas of land within which it establishes a network of populations. This strategy compensates for the often dramatic losses experienced as a result of hymenopteran parasitism, and local extinctions and recolonisations are a feature of the dynamic changes that commonly occur within the population network. A measure of this requirement is exemplified by the fact that all of the 80 attempted reintroductions of this species have failed. Where suitable habitat does exist, populations can be maintained by light (but not heavy) cattle or pony (but not sheep) grazing.

Unfortunately, this species was lost from six RSPB reserves in Wales in the 1980's, but is still recorded at Loch Gruinart on Islay.

The **High brown fritillary**, *Argynnis adippe* (RDB2, BAP Priority) has experienced a national decline of 94 % in recent years. It's last remaining strongholds are in the Lake District, Dartmoor and Exmoor. It is present at Wharton Crag and Leighton Moss where the populations are monitored closely.

The **Queen of Spain fritillary**, *Issoria lathonia*, a rare migrant, became temporarily resident at Minsmere in Suffolk between 1996 and 1999.

The **Pearl-bordered fritillary**, *Boloria euphrosyne* (Notable b, BAP Priority), like the High brown fritillary, has decreased at an alarming rate and is also closely monitored at Wharton Crag and Leighton Moss.

The **Small pearl-bordered fritillary**, *Boloria selene* (Notable b, BAP Conservation Concern) has declined to a lesser extent than the High brown and Pearl-bordered fritillaries, and remains relatively widespread in western parts of Britain. Small numbers are recorded annually at Ynys-hir.

Species focus:

Heath fritillary, *Melitaea* (*Mellicta*) *athalia* (Plate 02L)

The Heath fritillary, *Melitaea athalia* (RDB2, BAP Priority) was almost certainly saved from extinction by the intervention of conservation bodies in the late 20th century. In 1980, the Heath fritillary was recorded from only six 10km squares, and 25 of the 31 colonies discovered during that survey (which was prior to the discovery of the Exmoor colonies) were found within the Blean Woods complex in Kent. This group of colonies subsequently reached a "low-point" of 14 colonies between 1990 and 1995, but has since recovered to around 18 colonies following increased habitat management (Asher, *loc. cit.*).

Although this remains one of our rarest British butterflies (being fully protected under Schedule 5 of the Wildlife and Countryside Act, 1981), careful management of this species has ensured that the slow upward trend in its fortunes has continued, and unlike the Marsh fritillary, conservationists have shown that the re-introduction of this species to suitable habitat can be successful.

Plate 02L shows the rare aberration *Melitaea athalia ab. corythallia.* This bizarre form was originally named as a separate species; the Dark underwinged fritillary, *Papilio eos* Haworth. (Russwurm, 1978) and is also the *"ab. eos"* that Frohawk discovered in Abbot's Wood in Sussex in 1907 (Frohawk,1938), (the first record of this aberration since it's original discovery at "Peckham in London" 104 years earlier.)

The **Wall brown**, *Lasiommata megera* has been recorded from South Stack (Anglesey) and North Warren (Suffolk), where it appears to have had a partial recovery from the observed decline of recent years.

The **Mountain ringlet**, *Erebia epiphron* (Notable a, BAP Conservation Concern) is still present at Haweswater and the **Large heath**, *Coenonympha tullia* (BAP Conservation Concern) is recorded at Campfield Marsh.

Macro-Moths

RSPB reserves support over 640 species of macro-moths, including 42 RDB and over 140 Nationally Notable species – more than 70 % of the

UK species in those categories (Cadbury 1993). Among the most important sites are those that support species associated with reedbeds, heathland and northern birch woods, such as Minsmere, Arne, and the Insh Marshes. Many reserves regularly operate light traps, but there are still plenty of opportunities for finding new species, even at regularly trapped sites. A list of the most notable species includes:

Triangle, *Heterogenea asella* (RDB3); **Grass eggar**, *Lasiocampa trifolii* (Notable a but form *flava* is RDB1); **Kentish glory**, *Endromis versicolora* (RDB3); **Tawney wave**, *Scopula rubiginata* (RDB3); **Dark-bordered beauty**, *Epione parallelaria* (RDB3, BAP Priority, RSPB lead partner); **Lunar yellow underwing**, *Noctua orbona* (Notable a, BAP Priority); **Cousin German**, *Paradiarsa sobrina* (Notable a, BAP Priority); **Ashworth's rustic**, *Xestia ashworthii* (Notable a, BAP Priority); **Double line**, *Mythimna turca* (Notable b, BAP Priority); **Flame wainscot**, *Senta flammea* (RDB3); **Rannoch Sprawler**, *Brachionycha nubeculosa* (RDB3); **Fenn's wainscot**, *Photedes brevilinea* (RDB3); **Sandhill rustic**, *Luperina nickerlii* ssp. *nickerlii* (RDBK); **Marbled clover**, *Heliothis viriplaca* (RDB3); **Shaded fan-foot**, *Herminia tarsicrinalis* (RDB3); **Olive crescent**, *Trisateles emortualis* (RDB3); **Barred tooth-striped**, *Trichopteryx polycommata* (Notable a, BAP Priority); **Cloaked pug**, *Eupithecia abietaria* (RDB3); **Sword grass**, *Xylena exsoleta* (Notable b, BAP Priority).

Micro-Moths

Among the most notable micro-moths of conservation concern recorded on RSPB reserves are the Dungeness specialities ***Coleophora otitae*** (p.RDB1), ***Cynaeda dentalis*** (p.RDB3) and ***Ethmia bipunctella*** (RDB2); the bird's nest feeder ***Monopis monachella*** (p. RDBK); the sand dune species ***Platytes alpinella*** (RDB3) whose larva feed on Sea pea *Lathyrus japonicus*; the fungus eating ***Pima boisduvaliella*** (RDB3); ***Nemapogon picarella*** (Notable/provisional RDB); and ***Rhigognostis incarnatella*** (provisional RDB).

Hemiptera (True bugs)

The true bugs include the only "RSPB endemic" species ***Aphrodes duffieldi*** (RDBK). This leafhopper is so far known only from the reserve at Dungeness where it was discovered in 1919. It is found around the roots of False oat-grass *Arrhenatherum elatius* growing in shingle, and a survey was carried out in 2000 to investigate its habitat requirements and distribution (Badmin, 2000). ***Orthotylus rubidus***

(RDB) has recently been found at the new Suffolk Wildlife Trust/RSPB reserve at Dingle Marshes.

Other bugs of conservation concern recorded at RSPB reserves include: ***Salduda opercula*** (Notable b); ***Florodelphax paryphasma*** (Notable a); and ***Tyrpodelphax distinctus*** (Local).

In view of the list of Hemiptera likely to be present on the diverse range of habitats to be found on RSPB reserves, it would appear that there is much scope for extending this list.

Coleoptera (Beetles)

As for Hemiptera, there is much scope for the study of Coleoptera on RSPB reserves. The most extensive work appears to have been undertaken in Kent, where a number of notable species, particularly the Carabidae, have been recorded. Carabids recorded on RSPB reserves include: **Dune tiger beetle *Cicindela maritima*** (Notable a, BAP Priority); ***Omophron limbatum*** (RDB1) (Plate 02M); and ***Dyschirius obscurus*** (pRDB2).

Habitat focus:

Gravel pit margins

Plate 02M shows *Omophron limbatum* in typical habitat on the sandy margins of a gravel pit. This species, which was possibly indigenous in the 19th century, is believed to have recolonised England by flight (Luff, 1998). The unstable sand/silt margin of flooded gravel pits at Dungeness is an important (man-made) habitat that supports an extraordinary beetle fauna, which, in addition to *Omophron limbatum*, includes four other RDB species: ***Dyschirius obscurus*** (pRDB2), ***Heterocerus hispidulus*** (RDB3), and the staphylinids, ***Carpelimus schneideri*** (RDB1), and ***Bledius crassicollis*** (RDB2). (*Bledius* sp. are believed to be an important prey item for *Dyschirius* sp.). *Omophron limbatum* is known elsewhere in Britain only from Rye Harbour in East Sussex, and a very recent record from a gravel pit in the Norfolk Brecks. and *Dyschirius obscurus*, previously recorded only from the Lough Neagh region in Ireland, is now known from a handful of sites in Eastern English counties (Luff, 1998). The habitat in which the above species are found is transient, and under constant threat from invasion by reed and willows.

The other main area of study has been the aquatic beetles, which include the **Great silver water beetle**, *Hydrophilus piceus* (RDB3, BAP Conservation Concern), and that resident of shady pools, ***Dytiscus***

dimidiatus (Plate 02N) (RDB3). This latter species is the largest and rarest of our six native Great diving beetles (*Dytiscus* sp.), and will be among the species discussed in a forthcoming illustrated AES article on "The larger water beetles of the British Isles".

All of the above species have been recorded from Dungeness on the south-east coast of England, and recently, two species new to Britain: ***Bembidion coeruleum*** and ***Nebrioporus (Potamonectes) canaliculatus*** were recorded at the reserve. As average annual temperatures continue to increase with climate warming, it is likely that this site will become an important recording station for monitoring the influx of species looking to gain a "toe-hold" in the British Isles.

Other species of conservation interest on RSPB reserves include ***Saprinus virescens*** (RDBK); and the beautiful staphylinid, recently rediscovered in the UK; **The Maid of Kent**, *Emus hirtus* (RDB1).

Members interested in Coleoptera may also be interested in the web pages provided on the internet at www.coleopterist.org.uk. This site provides information on "where to find beetles", a large selection of photographs of British species, and details of locations (which include a number of RSPB sites.)

Diptera (Flies)

Several sites (Dingle Marshes (Suffolk), Titchwell Marsh (Norfolk), and Abernethy Forest (Inverness-shire)) have been well-surveyed for Diptera.

The RSPB is the lead partner for two BAP priority species: ***Hammerschmidtia ferruginea*** (RDB1, BAP Priority) and ***Blera fallax*** (RDB1, BAP Priority). (Both of these endangered Syrphids are restricted to a handful of sites in Scotland.) Other species include: ***Oxycera morrisii*** (RDB2); ***Stratiomys longicornis*** (RDB2); ***Haematopota grandis*** (RDB3); ***Hybomitra ciureai*** (RDB3); ***Eutolmus rufibarbis*** (RDB3); ***Scatella obsolete*** (provisional RDB2); ***Tipula nodicornis*** (RDB3); ***Limnophila pictipennis*** (RDB2); ***Metalimnobia quadrimaculata*** (RDB2); ***Ormosia ruficauda*** (New to Britain); ***Rhadiurgus variabilis*** (RDB3); ***Laphria flava*** (RDB3); ***Spiriverpa (Thereva) lunulata*** (RDB3, BAP Priority); ***Thereva handlivschi*** (RDB3); ***Callicera rufa*** (RDB3); ***Chemaesyrphus scaevoides*** (RDB3); ***Physocephala nigra*** (RDB3); and ***Tetanocera freyi*** (RDB3).

Many other Notable species of Diptera have been recorded on RSPB reserves.

Aculeate Hymenoptera (Bees, Wasps and Ants)

The RSPB is the lead partner in the conservation of the **Great yellow bumble bee**, *Bombus distinguendus** (Notable b, BAP Priority), and ***Osmia uncinata*** (RDB2, BAP Priority), both of which are found on reserves in the Hebrides

Other species include: **Southern wood ant**, *Formica rufa* (BAP Priority); ***Formica aquilonia*** (Notable b, BAP Priority); ***Formica exsecta*** (Provisional RDB1, BAP Priority); and ***Pemphredon rugifera*** (RDB3); and many more Notable species.

Again, Dungeness is a particularly important site for aculeate Hymenoptera, but the formerly species-rich habitat has shown quite disturbing signs of deterioration, with the apparent loss of ***Bombus ruderatus*** (Notable b, BAP Priority), ***Bombus sylvarum*** (Notable b, BAP Priority) and ***Bombus subterraneus*** (Notable a, BAP Priority). ***Bombus humilis*** (not scarce but major decline, BAP Priority) is still present on the reserve.

The Biodiversity Monitoring Programme has now run its first five-year cycle and is entering a review period, during which the list of target species will be revised and more detailed monitoring methodologies defined. During the Biodiversity Recording Programme there have been many highlights, and the above information clearly shows the significance of RSPB reserves for many threatened and protected species of insects. However, there are no doubt many other exciting discoveries still to be made, and if you would like to visit an RSPB reserve to record insects please contact the reserve warden or Mark Gurney (mark.gurney@rspb.org.uk) at The Lodge, Sandy, Beds. SG19 2DL (Tel: 01767 680551). Your records will help towards the next stage of the RSPB's survey programme, and there is a good chance you will be rewarded with finding something rare!

References

Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G. and Jeffcoate, S., (2001). *Millenium Atlas of Butterflies in Britain and Ireland*. Oxford University Press, Oxford.

Badmin, J.S., (2000), *The Distribution of the British Endemic Leafhopper* Aphrodes duffieldi *at Dungeness*, Unpublished Report, RSPB, Sandy.

Cadbury, J., (1993), *The Conservation Importance of RSPB Nature Reserves for Moths*. RSPB Conservation Review No.7, Sandy.

Cadbury, J., (1999), *The Recording of Non-avian Biodiversity Species of Conservation Importance at RSPB Nature Reserves 1998*, Unpublished report. RSPB Sandy.

Cadbury, J., Shardlow, M. and Gurney, M., (2001), *Biodiversity Monitoring Programme at RSPB Nature Reserves in 1999*, Unpublished report. RSPB Sandy.

* Members who attended the 2001 AES AGM at the Natural History Museum will remember the plight of this and other species being discussed in the excellent lecture given by Mike Edwards on British bumble bees.

Plate 02A. Large cone-head *Ruspolia nitidula*, St Martin-de-Crau.

Plate 02B. Citron-winged grasshopper *Oedaleus decorus*, Plaine-de-la-Crau.

Plate 02C. Praying mantis *Mantis religiosa*, Plaine-de-la-Crau.

Plate 02D. Two-spotted cricket *Gryllus bimaculatus*, Mireval.

(Sutton, A selection of Orthopteroid insects from the French Mediterranean)

Plate 02E. Praying mantis nymph *Empusa pennata*, foothills of Montage de la Gardiole.

Plate 02H. Saddle backed bush cricket *Ephippiger ephippiger*, Causse Mejean Plateau.

Plate 02E. *Ameles decolor*, foothills of Montage de la Gardiole.

Plate 02G. White faced bush cricket *Decticus albifrons*, Mas des Dunes, Montpellier.

(Sutton. A selection of Orthopteroid insects from the French Mediterranean)

Plate 02I. Southern damselfly *Coenagrion mercuriale*.

Plate 02J. Macropterous Bog bush-cricket *Metrioptera brachyptera* f. *marginata*.

Plate 02K. Marsh fritillary *Euphydryas aurinia*.

Plate 02L. Heath fritillary *Melitaea (Mellicta) athalia* ab. *corythallia*.

(Sutton, Insects of Conservation Importance on RSPB Reserves)

Plate 02M. *Omophron limbatum*.

Plate 02N. *Dytiscus dimidiatus*.

(Sutton, Insects of Conservation Importance on RSPB Reserves)

Plate 02O. Privet hawk caterpillar on holly.

(Dean, An unusual foodplant?)

Devon Biodiversity Action Plan – Marsh Fritillary, (1999), http://www.devon.gov.uk/biodiversity/fritilla.html
Devon Biodiversity Action Plan – Southern Damselfly, (2000), http://www.devon.gov.uk/biodiversity/damselfl.html
Frohawk, F.W., (1938), *Varieties of British Butterflies*, Ward Lock, London.
Luff, M.L., (1998), *Provisional Atlas of the Ground Beetles (Coleoptera: Carabidae) of Britain*, Huntingdon: Biological Records Centre.
Merritt, R., Moore, N.W. and Eversham, B., (1996), *Atlas of the Dragonflies of Britain and Ireland*, ITE Research Publication No.9. London HMSO.
Russwurm, A.D.A., (1978), *Aberrations of British Butterflies*, E.W.Classey Ltd., Farringdon.

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The Hoverfly *Volucella inanis* – One to look out for in 2002?

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On the 13th July 2001 I got out of my car at work on the northern edge of Northampton (Grid Ref SP776636). On a small patch of Bramble, *Rubus fructicosa* agg, next to the car park several hoverflies were feeding. There is nothing unusual in this. However, one seemed much larger than the rest. Initially I thought it was a Wasp, but closer examination revealed it to be the hoverfly *Volucella inanis*. I later consulted Stubbs and Falk (1996). Here I found the distribution (as of 1996) was described as: "The outer suburbs of London and the adjacent countryside ... Additionally there are a few records for Kent, Oxfordshire and Cornwall." No mention of anything as far north as Northamptonshire.

So I sought help from other entomologists. Internet discussion confirmed that this is likely to be the first Northamptonshire record for the species.

The habitat where I observed *V. inanis* is suburban, with several patches of waste ground. There are several large old conifers (Pines and Cedars) close by. The only other hoverflies feeding on the Bramble were *V. pellucens* (single) and *Episyrphus balteatus* (many), though there were many Bumble Bees, *Bombus* spp and Social Wasps, *Vespula* spp.

The *V. inanis* proved to be very faithful to this patch of Bramble. It was present for a few weeks thereafter. I never observed it on any other flowers in the vicinity. It was later found dead within the buildings nearby (now in my collection).

Interestingly, I later saw a second individual feeding in my garden in Ringstead, north east of Northampton, Grid Ref SP989753. Such an obvious species is unlikely to have been overlooked in the past. So these records are likely to represent spread of the species.

Further discussion has shown that the Northamptonshire records were not isolated occurrences for 2001. *V. inanis* was seen in Peterborough, Nottinghamshire and Leicestershire (Stubbs 2001). It remains to be seen if 2001 was just an unusual year or if this represents a range expansion for the species. Certainly AES members in counties to the north and west of Nottinghamshire, Northamptonshire and Leicestershire should remain vigilant for this attractive species in 2002.

Species description

Volucella inanis belongs to the tribe Volucellini, family Syrphidae (hoverflies). Members of this tribe tend to be large and stocky. They mimic Bumble Bees (Bombus) or the larger social Wasps (*Vespa*, *Vespula*).

V. inanis is a very distinctive species. It is about 13.5-15.8mm long. It is relatively hairless and the abdomen is clearly striped with yellow and black. The only species likely to be confused with it is *V. zonaria* (which may also spread northwards in the wake of *V. inanis*). However, *V. inanis* has yellow on tergite 2, compared to chestnut in *V. zonaria*. The latter species is also larger at about 17-21.7mm long.

Volucella hoverflies tend to be found on woodland margins, wasteland and even gardens. The larvae are scavengers in the nests of Bumble Bees, *Bombus* spp and Social Wasps, *Vespula* spp.

References

Stubbs, AE and Falk, SJ (1996) *British Hoverflies: an illustrated identification guide.* (Reprint with first supplement). British Entomological and Natural History Society, Reading.

Stubbs, AE (2001) Flies, in Wildlife Reports. *British Wildlife* 13 (2): 131.

An unusual foodplant?

by Mike Dean (5563)

The recent plea in the *Bulletin* for more articles prompted me to unearth a photograph that I believe dates from late summer 1997; you know how it is – something interesting put aside for future action and then buried under a pyramid of paper.

It was my next-door neighbour who drew my attention to a small Holly tree in his front garden. He knew I was interested in "bugs", so when rapping on my front door, he complained bitterly that something had been "giving his Holly hell!" Somewhat intrigued, I unsuspectingly followed into his garden, and was able to verify that something indeed had taken a liking to his bush, as all the upper shoots, where the leaves tend to have few spines, had been stripped bare. I was initially mystified,

as I couldn't think of any insect that would do that amount of damage. Maybe it was a mammal such as a squirrel. However, all was soon revealed, as my eyes suddenly focussed on the unmistakable form of full-grown larvae of the Privet hawk-moth (*Sphinx ligustri* L.) (Plate 02O). Judging by the missing foliage, it had probably not been alone, although I was unable to locate any others.

I have regularly found this species on our own Lilac trees, and on Privet bushes in our locality, and I have reared caterpillars on Ash, but I have never ever heard (or read) of the species utilising Holly.

Perhaps someone out there has?

Japanese Insects

by James Fragley (9112)

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The article in Vol. **60** No 439 by Masaya Okada prompted me to check my library for a Japanese butterfly book. In fact I have a three-volume work by H. Pryer, called *Rhopalocera Nihonica*, and the three short parts were published between November 1886 and December 1889. The contents are limited, and are in Japanese and English. In total there are ten colour plates.

I have never seen nor heard of this work apart from the copy I have. Is it of interest to Japanese lepidopterists? Indeed is it of any general interest at all? The plates are beautifully executed, but the text is, shall we say, very Victorian.

I would be interested to know if anyone can cast any light on this publication.

Ibiza Uncovered (by an entomologist)

by Clive Betts (4976)

Ibiza has had a lot of publicity in the past few years, mostly for its wild nightclub scene. However, a Mediterranean island just two hours flight from our local airport (Exeter in Devon) makes a pretty tempting destination no matter the publicity.

For the past three years my family, two grown-ups and three youngsters, have spent two weeks of our summer holidays in Ibiza. During our first visit I felt duty-bound to sample the nightlife and club scene. It was certainly very lively, exciting and (depending on perspective) wild, but with only a fringe of the more outrageous scenes portrayed on TV! More importantly other aspects of the island were equally interesting and, in a different sense, very wild.

Perhaps one of the most attractive aspects of the island is its size. A pocket-size 40km by 20km it is easily manageable but with a wide variety of landscapes and places sufficiently remote to feel peaceful. The road network is basic but comprehensive and driving is not for the faint-hearted around the towns but glorious fun in the countryside. Although there are plenty of buses between the major villages and resorts, a car is essential to properly get lost. Even with a map.

Much of the tourist development is restricted to the south-east corner (South of Eivissa – Ibiza's capital town – along the Playa d'en Bossa) with the most intense clustered around the West coast resort of San Antoni. There are a few other large-ish developments (Es Canar, and around Santa Eulalia) but the rest of the island has only a scattering of small resorts. The hinterland, except around Eivissa and near the airport, is open countryside peppered with villages, farms, churches, hillside villas, forests and citrus and carob groves. Many of the beaches are backed by sand dunes (especially in the south) or framed by cliffs topped with pine forests that stretch for kilometres along exotic and deserted coastline.

For our last trip we were fortunate to stay in a traditional Ibizenco villa on a large farm estate not far from Eivissa. The villa had once been a farmhouse, or finca, which used to include (like Devon long-barns) living quarters for animals downstairs, and humans upstairs. Over the centuries it had grown organically, as is the Ibizenco way, with rooms being added to accommodate family as necessary.

The surrounding farmland was very dry with some rough grazing and carob groves. From the patio we could see in the distance the alien

landscape created by the huge saltpans south of the airport. Salt was once Ibiza's major industry. 60,000 tonnes are still exported annually to mainland Spain, though the annual two million tourists are now its main industry!

Our "garden" consisted mostly of sparse herbs such as superbly aniseedy fennel, plus scatterings of thyme, a huge oleander bush and dozens of potted geraniums. A beautiful bougainvillaea draped itself languidly over the roof of the patio, just as it had been trained to do in the languid-draping school that all Mediterranean bougainvillaea must surely attend.

All these flowering plants were an oasis of colour in the arid fields, attracting many insect visitors along with their predators and friends! Unfortunately for some of them the garden also featured a large swimming pool. However, to an entomologist without a net (is that possible?) this proved to be a major bonus...

Our arrival in the midday heat, was greeted by several geckos, followed closely by the remarkable and industrious ants who pretty much became part of the family in the villa. We swept them out of the villa itself but they meandered their trails agreeably over the patio to collect outrageously large chunks of pastry or biscuit dropped from the table. The children were fascinated with the vast difference in caste size: tiny workers lugging the food around watched over by hulking great soldiers.

The patio was also popular with the elegant digger wasp *Sceliphron* (Hymenoptera, family Sphecidae). Friends think I must be one of a small group of bizarre people that would describe a wasp "elegant" but their construction, like many insects, is superb. These large solitary wasps are mostly black and trail their graceful, yellow legs in flight while holding up their long slender "waists" bearing a small black abdomen. Their nests are unusual for digger wasps in that they are tubes constructed from mud and cemented to walls or other suitable surfaces. I watched them for ages as they hunted spiders in the eaves of our patio and collected mud from around our pool.

The patio area was also visited by a close relative of *Sceliphron*, a potter-wasp (Hymenoptera, family Eumenidae). Much smaller than *Sceliphron*, these wasps also have an elongated, slender waist joining a bulbous abdomen to the thorax. Potter wasps build beautiful, pot-shaped nests out of mud which they then stock with caterpillars, though I failed to find a single nest throughout our two week stay.

August nights in Ibiza are hot and, where we were staying, featured crickets, geckos, bats, moths and the ubiquitous mosquitoes. Without air-conditioning or fans, the villa was quite stifling and after a couple of restless nights I decided to take a midnight dip in our pool which had its own internal lights. What a glorious relief! I wasn't the only visitor, however. The pool's surface was littered with insects attracted to the lights. It was difficult to rescue (or indeed identify) the casualties so, after a leisurely swim under the stars I gave up and returned to the villa to address numerous mossie bites.

In the morning we managed to engage our children in what became a pre-breakfast routine to clean the night's casualties from the pool with a fine mesh net. I would then wax lyrical over those I recognised (or guessed at) while the rest of my long-suffering family ignored me and tucked into ensaimada (a yummy pastry speciality of Ibiza). I think the ants particularly appreciated our breakfasts.

The pool also attracted, and captured, insects in the day and after two weeks I had built up a small collection of fatalities without lifting a finger! Common victims were worker social wasps (Hymenoptera, family Vespidae, what look like *Vespula germanica* if their range extends that far) that came to the pool to drink/collect water. Vespines use water to mould wood fibres used to construct the paper carton of their nests. Spanish mainland social wasps include the aggressive *Polistes* whose nests are much smaller than the vespines' and are not covered by a paper envelope, but I never saw these in Ibiza. One of our regular visitors, a large, bright blue dragonfly (Odonata, family Aeschnidae probably) would chase any water-logged wasps that managed to survive their dunking as they flew clumsily from the pool.

Among the numerous non-swimmer Microlepidoptera I saw some quite interesting and colourful tortricids and pyralids but they were impossible to collect without wrecking them. I'm afraid our lizards were the best fed in the area...

Lots of green shield bugs (Hemiptera, family Pentatomidae) also flew into the pool during the day along with several alydids (Hemiptera, family Alydidae). Alydids are accomplished fliers that mimic spider-hunting wasps in several aspects of their appearance and behaviour. Admittedly bugs (ie Hemiptera) are not really well-known for their flying abilities but even in the UK, given a hot sunny day, there will be members of several major bug families (especially Miridae, Coreidae, Pentatomidae) recklessly hurling themselves around your garden.

Despite its obvious attraction I only found one insect sharing our pool that could cope with being in the water, a water-boatman (Hemiptera, family Corixidae). Adult water bugs are not only very good swimmers, using modified last-legs as paddles, but are also capable of flying considerable distances.

The slatted wood pool-surround was shelter for the brilliant, red and black fire-bugs *Pyrrhocoris apterus* (Hemiptera, family Pyrrhocoridae). They often congregate and we counted dozens of nymphs of all sizes along with adults; these being wingless like the nymphs. At night this same area was alive with scuttling, black beetles that looked like our own churchyard beetles, *Blaps mucronata*. Like many insects I have seen abroad, even the larger ones can be impossible to identify with confidence. There are numerous black beetles that belong to the family Tenebrionidae and without a key, or even a vague idea whether *Blaps* has any relatives or look-alikes in Ibiza, I could not be sure of its identity. The beetles I saw were quite large (around 25mm long) and were the subject of several major pool-rescue operations by our youngest who was fascinated by their bulk ("its like a toy....").

Among the most graceful pool casualties were the adult ant-lions (Neuroptera, family Myrmelionidae). At least three different species were regularly trapped at night, though their soft bodies and delicate wings rarely survived removal intact after a night in the pool. Adult ant-lions have long slender bodies and large wings, the membranes of which are supported on a network of fine veins. Ant-lion larvae however, are fierce, ground-living predators; some even digging a pit-fall trap into which hapless ants tumble, assisted by the larvae chucking soil or sand grains at them using their large mandibles!

Once, while floating around under an impossibly blue sky, I heard a whirring, saw a flash of colour and a praying mantis (Dictyoptera, family Mantidae, possibly *Iris oratoria*) collided with the water beside me. Despite a quick rescue it did not survive. Shortly after its demise I managed to extend its drab green forewings to reveal orange, purple and yellow hindwings, much to everyone's amazement. This prompted the question "which wings does it fly with?". Wimping out on the aerodynamics issue I left the answer to "all of them, sort of".

The same day I pointed out the flash colours of the large grasshoppers (Orthoptera, family Acrididae, possibly *Oedipoda caerulescens*) as we walked through an adjoining field. Explaining *why* these grasshoppers showed such colouration was more difficult. My eldest argued that "if they just hopped out of the way without showing

off, you wouldn't notice them half as much...". More research needed here then.

Having enjoyed our 2000 holiday at a resort called Cala Llonga on the East coast, we made a couple of return trips to savour its fabulous golden beach. Here my eldest son and I trekked up the coastal "mountain" of Puig marina. It is only 205m high but in the heat of the midday sun the trail must have been at least 3000km long. The stony path led from the beach road up into a peaceful nature reserve that runs along this outcrop and the adjoining Puig de Pep, in an unbroken forest of pine trees and mixed scrub for about 4km. The track was sometimes difficult but the views spectacular and the only noise that of the cicadas, birds and distant sea below (if you exclude much panting and wheezing). The aroma of hot pine trees mixed with herbs broken underfoot will always remind me of Mediterranean holidays!

The forest and its paths were home to fleet-footed emerald green lizards that let us approach close enough to see their individual scales, then silently vanish as if by magic. I was also interested by what, to me, looked like pheromone traps hanging from many of the pine trees on the lower part of the trail. Inside there were often small parasitic wasps (Hymenoptera, family Braconidae) but what purpose these traps served (if that was what they were) remains a mystery.

There were many other special moments and memories from our holiday, too numerous (or obscure) to relate here, though driving on the right for the first time was a moving experience for me. At the end of our stay my collection of pool casualties was safely returned flat-packed in an (unused) nappy – now there's an entomological tip!

Ibiza has turned out to be our favourite holiday location for all sorts of reasons, insects included!

Saturday 20th April, 2002

The Bartlett Room, London Zoo,
Regent's Park, London.

Looking back on the butterflies and moths of an old Northamptonshire woodland

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Prior to the Middle Ages much of the countryside between Stamford and Oxford was covered by continuous woodland. As time went by, large areas were gradually cleared to form villages, farmland and parkland. The remaining woodlands eventually became sufficiently separated to be accorded their own identities and those that were included in an area of some 200 square miles in north-east Northamptonshire were designated a Royal Hunting Forest by William the Conqueror; this became known as the Rockingham Forest. Some of these constituent native woodland remnants still exist and are called ancient woodlands that abound with wildlife. One such woodland, Weekley Hall Wood, situated less than a mile north of Kettering at grid reference SP875821, is owned and commercially managed for timber and pheasant rearing by Boughton Estates. The wood originally occupied an area of about 200 acres and was a typical Rockingham Forest damp wood lying on clay, primarily of ash, field maple, hazel and oak.

Due to its proximity to Kettering it was a favourite wood for local naturalists particularly of the Kettering and District Natural History Society (K.&D.N.H.S. see references). Although privately owned, special permits for access were granted and it was extensively recorded for butterflies and moths from around the middle of the 19th century until the early 1950s when recording activity gradually decreased. The wood is specifically mentioned in the Northamptonshire Victoria County History (Published in 1902) and described along with Geddington Chase as the great oak woods in the neighbourhood of Kettering. The earliest records that I hold date from the 1850s and seem to give rise to some of the V.C.H. butterfly and moth entries. These early records were published in the *Entomologists Weekly Intelligencer* in the late 1850s in several articles by William Sturgess of Kettering. They detailed his captures of woodland species near to and in the neighbourhood of Kettering. Although Weekley Hall Wood is not specifically mentioned there are sufficient clues to remove any doubts that this is the wood that he was visiting. The wood is much nearer to Kettering than Geddington Chase, which usually seems to be identified in earlier reports, and I do hold other literature where "near Kettering," has a

manuscript note, "Weekley Hall Wood," or the record can be traced back to this source. In the times of almost a century and a half ago, there would undoubtedly have been access restrictions that may have made it undiplomatic to be too specific as to the locality, even if concessionary access had been granted. A managed wood within easy walking distance of the town must have been a Mecca for unwelcome visitors and would have been heavily policed by keepers with high penalties for trespass. I have included a copy of the one inch to one mile Ordinance Survey map dated 1913 showing how the area was around the turn of the last century.

In later years much effort went into seeking out the more elusive insects. Weekly meetings were arranged and in some years the wood was surveyed almost continuously from early spring to late winter. Specific trips were made by day for particular butterflies and at night mothing was conducted by sugaring and with acetylene and paraffin lamps. A variety of other forms of fieldwork were employed, beating for larvae, pupa digging and the systematic working of tree trunks by day for resting moths. All of this concerted effort translated itself into a butterfly and moth list that compared well in its day with any local and most national woodlands.

In the Kettering Society's report and summary of recording for 1945, the wood was regarded as being, "Not the happy hunting ground that it has been." It was said that although the ridings had been nicely cleared there were insufficient trees left to sustain the insect populations of former years. It was also felt that the area would not remain a wood for much longer. In common with other former Rockingham Forest woodlands the ground was rich in iron ore and in about 1950 permission was granted to Stewarts and Lloyds of Corby for opencast quarrying of the wood and surrounding fields. This work was started in 1951 in the fields surrounding the wood and the old keepers cottage on the outskirts of the wood became derelict by the end of 1952. By this time access had become more difficult and the wood was visited less frequently by recorders. The quarrying of the woodland commenced in 1956 and continued until 1978 with limestone forming much of the later extraction (Tonks 1989). After quarrying, the remaining semi-natural ancient woodland had been depleted to some 12 acres. Northamptonshire has lost approximately two thirds of its ancient woodland since the last war (Colston *et al.* 1996). Clearly this woodland features in the loss, but to put things into perspective, it only represents a small part of the area that has been lost over the whole county.

Figure 1. O.S. Kettering, Published 1913, Revisions 1901-3, Scale: 1" to 1 mile.

The old documented records and information that I hold provide a real insight as to how Weekley Hall Wood used to be for butterflies and moths and I have quoted selectively from these below. The dates that I have quoted for the last record held are not necessarily when the species ceased to be present, but often when people stopped going to the site or did not visit when the insects were on the wing. In general I have restricted my comments to the species that have disappeared from other sites locally and where possible I have given dates of the last grid square record held from the localities visited by the old Society members. Many of the lost species are now regarded as of national conservation priority or concern.

Some lost butterflies

Chequered skipper – *Carterocephalus palaemon*. Present in Northamptonshire at Castor Hanglands in 1823 (South 1906), and near to Towcester in 1842 (Clark 1842), it was stated as having been taken very freely in the neighbourhood of Kettering in 1857 (Sturgess 1857). By the mid 1890s the butterfly was still regarded as very local (Wallis 1880-), but by 1907 it was to be found in many woods from Yardley Chase to Farming Woods and was described as locally abundant (Wallis 1908-10). The indications are that it increased its range around the turn of the 20th century but that it had colonised Weekley Hall Wood by about 1850. The first specific record that I hold for the wood was in 1917; it was then well recorded there until the 1960s, the last record that I have being in 1964. As in other local woods its presence was taken for granted and due to its rapid demise it was hardly missed before it was gone. Of all the butterflies and moths that have been lost to the county this is probably the most significant. By the turn of the 20th century the English populations of the butterfly were confined to a few counties in the east Midlands with the highest in the north-eastern parts of Northamptonshire (Emmet & Heath 1990). It was a positive enhancement to our local woodland scene with its distinctive behaviour and colouring. This is very well portrayed by a comment in an article on the butterfly by R. E. M. Pilcher in which he says, "Castor Hanglands in the old days, when almost every sunny patch seemed to be alive with this insect, flying rapidly from flower to flower (generally *Ajuga reptans,* Bugle), or alighting on a blade of grass with its wings expanded to the sun; dashing off to drive away an intruder or making mock battles with a rival, and settling again for a brief sunbathe; a fussy little insect, always busy about something, a flash of chocolate and gold against the sun-lit backcloth of green." In this article written in the

1960s Mr. Pilcher says that "An insect in no apparent danger of extinction, but well worth some trouble to maintain in good numbers." (Pilcher 1961-).

Other last dated society records:- Collyweston (TF00) 1958, Castor Hanglands (TF10) 1974, Gretton (SP89) 1941, Bangrave Wood (SP99) 1958, Bedford Purlieus (TL09) 1957, Hermitage Wood (SP78) 1947, Geddington Chase (SP98) 1964, Barnwell Wold (TL08) 1947, Gib Wood (SP87) 1944, Cranford Wood (SP97) 1960 and Sywell Wood (SP86) 1964.

Brown hairstreak – *Thecla betulae*. This always seems to have been the least common of the five hairstreaks that have occurred in the wood and for that matter also locally. The only record that I have been able to trace is from 1923.

Other last dated society records:- Helpston Heath (TF10) 1956, Bedford Purlieus (TL09) 1942, Geddington Chase (SP98) 1921, Barnwell Wold (TL08) 1956, Hazel Beech Wood (SP77) 1940 and Thrapston (SP97) 1947.

Black hairstreak – *Satyrium pruni* featured in a report in the *Intelligencer* of 1858. "On the 19th inst I captured three dozen *Pruni,* flying round the flowers of the Wayfaring tree, *Viburnum lantana."* (Sturgess 1858). There was a tendency to suppress the localities of this species due to popularity with collectors, but it was certainly recorded again in the wood in 1947. This butterfly is of course still present locally.

Duke of Burgundy fritillary – *Hamearis lucina*. Local with poor powers of dispersal forming small discreet colonies, this butterfly was present at Geddington Chase around the turn of the 20th century (Wallis 1908-10). It was not found at Weekley Hall Wood until 1944 where it occurred for a few years before it disappeared from the wood. It is still hanging on in one Rockingham Forest locality.

Other last dated society records:- Collyweston (TF00) 1958, Helpston Heath (TF10) 1957, Wakerley Wood (SP99) 1952, Brickhill Wood (SP98) 1940, Barnwell Wold (TL08) 1947, Broughton (SP87) 1946 and Sywell Wood (SP86) 1964.

Purple emperor – *Apatura iris*. This species is mentioned in an article by W. Sturgess in the *Entomologist's Weekly Intelligencer* of 1859 detailing captures of a variety of the butterfly in 1857 and 1858 (Sturgess 1859). In 1857 he also visits a larger wood near to Kettering

and in the July of that year captures no less than 80 Purple emperor butterflies by attracting them to carrion (Sturgess 1857). Although he does not name the wood, it is clear that this is Geddington Chase. In the year 1859 it was said that the species had been exceedingly rare, only seven having been netted in this neighbourhood (Sturgess 1859). By the turn of the 20th century it was described as being of frequent occurrence in most large woods (Wallis 1880-). There is a record of a butterfly being seen in Weekley Hall Wood near a dead mole in 1887 and a further record a few days later (Wallis 1880-). I have been unable to find any subsequent records for the wood. Generally speaking the species became extinct in the Rockingham Forest over 60 years ago, but some stock from Bernwood Forest was then successfully reintroduced to Fermyn Wood where it has spread to other suitable nearby woodland.

Large tortoiseshell – *Nymphalis polychloros.* Included in the *Weekly Intelligencer* of 1859 in the list of captures near Kettering (Sturgess 1859). Around the turn of the 20th century it was regarded as not common but generally distributed (Wallis 1880-). There is a 1943 record of the butterfly at Weekley Hall Wood that was observed over a number of days. The record is endorsed, "First time really identified since 1903." There are indications that this earlier butterfly was also seen at Weekley Hall Wood.

Other last dated society record:- Geddington Chase (SP98) 1903 (Wallis 1908-10).

Small pearl-bordered fritillary – *Bolaria selene.* Always seen as more local than its congener and mainly southern in its distribution within the county, the butterfly was found in a number of places in this wood in 1934. It was then recorded over the next decade or so before dying out.

Other last dated society records:- Wakerley Wood (SP99) 1952 and Gib Wood (SP87) 1944.

Pearl-bordered fritillary – *Bolaria euphrosyne.* First mentioned in the *Intelligencer* of 1859 (Sturgess 1859), by the early part of the 20th century it was still regarded as common in most large woods (Wallis 1908-10). The first specific mention that I have for Weekley Hall Wood is in 1917. There are qualifying notes on its abundance over subsequent years. In a 1920 report there is a note that, "during the last two or three years several members have interested themselves in endeavouring to

reinstate the butterfly in the wood where it had become extinct." This reintroduction was a success and it was then seen in the wood over the next three decades or so, albeit in small numbers in some years.

Other last dated society records:- Helpston Heath (TF10) 1949, Gretton (SP89) 1939, Wakerley Wood (SP99) 1952, Bedford Purlieus (TL09) 1956, Titchmarsh Wood (SP98) 1947, Broughton (SP87) 1942 and Sywell Wood (SP86) 1946.

High brown fritillary – *Argynnis adippe*. The only record that I have been able to trace from Weekley Hall Wood is from 1935. Of the five violet feeding fritillaries that have occurred in the wood, this was the first species to contract its range locally.

Other last dated society records:- Helpston Heath (TF10) 1943, Wakerley Wood (SP99) 1942, Bedford Purlieus (TL09) 1955, Lady Wood (SP98) 1939 and Barnwell Wold (TL08) 1942.

Dark green fritillary – *Argynnis aglaja*. Although in this area much less of a wood loving insect than the other fritillaries it was recorded in the wood in the 1940s. There are still infrequent sightings of butterflies locally, but the species is highly mobile and sometimes covers a large area away from its breeding site.

Silver-washed fritillary – *Argynnis paphia*. Another species mentioned in the 1859 *Intelligencer* report (Sturgess 1859). By the turn of the 20th century it was regarded as common in most large woods (Wallis 1908-10). The occurrence of the butterfly in Weekley Hall Wood varies between absent in some years in the 1920s to abundant in some years in the 1940s. In 1920 it was regarded as nearly extinct in the wood and efforts were made to "rehabilitate it." This was regarded as successful as very fair numbers were seen in 1921. It then declined again only being recorded as singletons in 1922 and 1923; by 1927 the situation had worsened even further in that there was a great scarcity of fritillaries with no Silver-washed recorded in the county. The butterfly was seen again in the wood in 1929 and then became more plentiful in the 1930s; a dozen were seen between 9th July and the 22nd July in 1934. The butterfly was then present in the wood until at least the late 1940s, ultimately this population forming part of the decline of the species in the east Midlands.

Other last dated society records:- Helpston Heath (TF10) 1958, Wakerley Wood (SP99) 1942, Bedford Purlieus (TL09) 1947, Geddington

Chase (SP98) 1945, Barnwell Wold (TL08) 1945, Mawsley Wood (SP77) 1948, Hardwick Wood (SP87) 1943 and Sywell Wood (SP86) 1943.

Table 1 below compares the overall butterfly species recorded from some of the better worked sites:

Table 1. Comparative record totals of butterflies recorded from local sites.

Site and National Grid Reference	Record Totals of Butterflies	Notes
Bedford Purlieus (TL09)	44	(Heath 1975) and (K&DNHS).
Castor Hanglands (TF10)	46	(Collier 1966), (Whitwell 1845) (BRC).
Geddington Chase (SP98)	40	(K&DNHS) and own field records.
Wakerley Wood (SP99)	41	(K&DNHS).
Weekley Hall Wood (SP88)	45	(K&DNHS) and own field records.

Some lost moths

The mocha – *Cyclophora annulata*. Present at Geddington Chase in the early 1880s- (Wallis 1880-) and regarded as rather common around the turn of the 20th century (Wallis 1908-10). The first record that I hold for Weekley Hall Wood is dated 1917. It used to be seen during the day by jarring the bushes and continued to be recorded until the 1940s. This is a nationally declining species that has not been seen in the county for many years.

Other last dated society records:- Gretton (SP89) 1945 and Geddington Chase (SP98) 1934.

Striped twin-spot carpet – *Nebula salicata*. Although regarded as more of a northern moth, this species was present locally until the 1940s. It was recorded in the wood in 1938 and 1940.

Autumn green carpet – *Chloroclysta miata*. Described as common at gas lamps in the 1890s (Wallis 1880-), and regarded as rather common in the county during the early part of the 20th century (Wallis 1908-10), it was first specifically recorded in Weekley Hall Wood in 1925 and then again in the 1930s. The species has not been seen in Northamptonshire for almost thirty years, however the closely related Red green carpet – *Chloroclysta siterata* that was historically the scarcer moth in the county has increased its range recently so there is hope the *miata* may recolonise.

Other last dated society records:- Sutton Bassett (SP79) 1946, Gretton (SP89) 1937 and Bedford Purlieus (TL09) 1932.

Cloaked carpet – *Euphyia biangulata*. Another species with very few Northamptonshire records, it was recorded in the wood in 1922 and 1932.

Other last dated society records:- Kettering (SP88) 1941 and Geddington Chase (SP98) 1907 (Wallis 1908-10).

Lunar thorn – *Selenia lunularia*. Always a rare moth in the county with less than a dozen records over the years; it was recorded in the wood in 1919.

Great oak beauty – *Hypomecis roboraria*. This moth was something of a speciality of the wood and seems to have been searched for annually. It used to be found sitting on tree trunks, although in 1919 one was taken at sugar. The first record that I have is for 1887 when one was noted at rest on the trunk of a chestnut tree (Wallis 1880-). In the 1890s it was described as occasional on tree trunks in the wood (Wallis 1880). It was stated to have had a good year in the wood in 1917 and continued to be recorded there until 1925. Despite notes of subsequent searches for it, there are no further records. This was also the year of the last record from Geddington Chase that had a similar record history for the moth.

Other last dated society record:- Barnwell Wold (TL08) 1907 (Wallis 1908-10).

Broad-bordered bee hawk-moth – *Hemaris fuciformis*. There is an entry in the *Intelligencer* for 1858 reporting the capture of half a dozen specimens of this moth flying around the flowers of Ragged-robin, *Lychnis flos-cuculi* (Sturgess 1858). Apart from a repeat record in 1859 (Sturgess 1859), there are no further records of the moth in the wood.

Other last dated society records:- Wakerley Wood (SP99) 1955 and Geddington Chase (SP98) 1907 (Wallis 1908-10).

Double line – *Mythimna turca*. There are three Northamptonshire records of this woodland species; the last of these was in Weekley Hall Wood in 1951. There is no doubt that it was breeding in the wood as the moth that was found was at rest, expanding its wings.

Other last dated society records:- Geddington Chase (SP98) 1906 (Wallis 1908-10) and Sywell Wood (SP86) 1946.

Orange upperwing – *Jodia croceago*. This only Northamptonshire record of the moth was of a singleton taken at sugar in 1906 by E. F. Wallis.

The record is mentioned in his *Lepidoptera of Northamptonshire* and noted, "near Kettering Oct. 3. 1906. Once only." There is a manuscript addition, "Weekley Hall Wood." in my copy by F. A. Adams who must have obtained this further detail from Wallis. This is confirmed in Wallis's early manuscript records where the locality is specifically given as Weekley Hall Wood. The moth having been taken along with other autumn species including the rather similar Orange sallow, *Xanthia citrago,* on a sugaring trip to the wood. This has always been an uncommon moth and currently is a cause of great conservation concern nationally. The unquestionable expertise of the recorder coupled with the fact that it was taken alongside the only possible moth that it can be confused with to my mind precludes any question of misidentification.

Heart moth – *Dicycla oo.* Described as local but occasionally plentiful in 1907, with a dozen having been taken mostly at sugar in Geddington Chase (Wallis 1908-10). The species does not seem to have been seen again locally until the 1950s when it came to m.v. light at localities around Kettering including the outskirts of Weekley Hall Wood. The moth is particularly subject to cyclical abundance and decline. For well over half a century it was regarded amongst entomologists as the great prize of Castor Hanglands, but it has not been seen there since 1963. The last Northamptonshire record was of a singleton at Yardley Chase in 1987.

Other last dated society records:- Bedford Purlieus (TL09) c1900 (Wallis 1880-) and Geddington Chase (SP98) 1907 (Wallis 1908-10).

White-spotted pinion – *Cosmia diffinis.* The first record that I have for this species is of a pupa having been dug up near the wood in 1887 (Wallis 1880-). There are subsequent records from the wood itself from the 1890s (Wallis 1880-) to the 1930s. The species favours well grown elms and would have found the mature English elm avenues that ran up to the wood an ideal habitat. These avenues were set out by John, the 2nd Duke of Montagu, known as Planter John, around 1721 (Bellamy 1986) and were devastated in recent times by Dutch elm disease. The decline of the large elms mirrors the decline of the moth both locally and nationally.

Other last dated society record:- Stanion (SP98) 1907 (Wallis 1908-10).

Present state

Although I have visited the wood for much of my life and can well remember going into the keeper's cottage, for almost all of this time it has been in its reduced state. Nowadays, in my opinion it would not

compare entomologically with the larger nearby Geddington Chase, I have therefore recorded more at the Chase. Conditional upon the granting of the original permission for quarrying there was a land restoration clause. Currently much of the land has been levelled and restored and the change in the composition of the habitat has produced some important new colonisers that reflect in my own field records. New species have moved into the area and there has been an increase in some of the existing populations. The planting of Lucerne, *Medicago sativa,* for its soil enriching properties along with an abundance of vetches and clovers seems to act as a Mecca for any Clouded yellows, *Colias croceus,* that are in the area. There is a good colony of the Green hairstreak, *Callophrys rubi,* and both Purple hairstreak, *Neozephyrus quercus,* and White letter hairstreak, *Strymonidia w-album,* have been seen. The five species of skipper that now occur, Small, *Thymelicus sylvestris,* Essex, *Thymelicus lineola,* Large, *Ochlodes venata,* Dingy, *Erynnis tages* and Grizzled, *Pyrgus malvae,* are usually plentiful. A single Marbled white, *Melanargia galathea,* has been seen, although the species are not known to be breeding on the site. All the more common butterflies occur and with a tally of around thirty species a season the area remains above average. The site is particularly good for day flying moths, the large plants of trefoils and vetches support Northamptonshire's largest known colony of Six-belted clearwing, *Bembecia scopigera*. The closely-related Yellow-legged clearwing, *Synanthedon vespiformis,* is present in the felled oak stumps. The more common diurnal moths are all present in good numbers and I have seen less common species such as the Grass rivulet, *Perizoma albulata,* and Barred rivulet, *Perizoma bifaciata,* associated with the Yellow rattle, *Rhinanthus minor,* and the Red bartsia, *Odontites verna,* respectively. The Orange underwing, *Archiearis parthenias,* can be seen flying around the birch trees in the spring. The Light feathered rustic, *Agrotis cinerea,* a nationally uncommon moth that occurs on quarried land locally has colonised the area and I have also seen the local White marked moth, *Cerastis leucographa,* on Sallow bloom inside the woodland.

It is pleasing to see, that although many of the notable butterflies and moths are no longer present there are at least some compensating species. Overall however, on reviewing the extensive records for Weekley Hall Wood it is apparent to me that although there were always cycles of abundance and scarcity, most of these lost species have been absent for so many years that they will probably never return. Despite its physical demise the species loss from the wood is only similar to the losses that have occurred in other local woodlands

that have not changed anywhere near as much in the last half century. In view of this, it is apparent that habitat loss and change can only be contributory factors in the species losses. Other causes such as fragmentation of colonies, build-up of parasites and climatic change giving rise to extreme conditions have also played their part. This is well illustrated by Miriam Rothschild in an article in 1975 in which the Chequered skipper – *Carterocephalus palaemon,* having previously been common is shown as absent at Ashton Wold in 1964 with a comment, "Now possibly extinct in England. This is inexplicable at Ashton where both the food plant and the bugle on which the imago feeds are doing well, and the appropriate clearings maintained" (Rothschild 1975). A further illustration is perhaps being provided by the current rarity and absence of The concolorous moth in south and mid Northants in woodlands where it was sometimes abundant but a few years ago. The large stands of the foodplant *Calamagrostis* still remain. It follows that habitat conservation and management, although the only part of the remedy that can be effectively tackled, is by itself insufficient to halt and reverse species loss.

For whatever reason, I am sure that the old recorders would simply not have believed that so many of the insects that they used to see year after year would have permanently disappeared as a feature of the local countryside.

Acknowledgements

It is difficult for me to know where to start with so many people and so much expertise involved in the assembling of this large record base. It is apparent however, that in the diligent assembly and meticulous maintenance of the records for over forty years, Arthur Cooper was a major force in this section. He has a reputation as a fine entomologist and field worker and as a founder member of the society was still attending meetings well into his eighties. Unlike Eustace Wallis, who had similar knowledge and experience, almost all of Arthur Cooper's material does not seem to have been published. There were of course other excellent field workers and some of their contributions speak for themselves. The sheer volume of records submitted by Frank Adams over the years, the finding of the larvae of the Kentish glory, *Endromis versicolora,* in 1919 at Wakerley Wood by Tommy Mobbs and Frank Thompson's almost 100% rearing of the Heart moth, *Dicycla oo,* from eggs found in crevices in the bark of an oak tree at Little Billing in 1950 to name but a few. There are so many obvious achievements and items of interest amongst these records that space precludes my covering

them all in this article. Finally, I would like to thank Brian Adams, Gerry Haggett and Martin Payne for their advice on this paper and my wife Brenda, for her constructive suggestions and for doing the computer work involved.

References

Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G & S., 2001. *The Millennium Atlas of Butterflies in Britain and Ireland*. Oxford University Press. For the English and scientific names of the butterflies.

Bellamy, B., 1986. *Geddington Chase, the History of a Wood*. Nene Litho.

B.R.C. Biological Records Centre. Butterfly records provided by The Institute of Terrestial Ecology Biological Records Centre.

Clark, H., 1842. Captures near Towcester. *Entomologist* **1**: 409-410.

Collier, R. V., 1966. Status of Butterflies on Castor Hanglands, N.N.R. 1961-1965 inclusive. *The Journal of the Northamptonshire Natural History Society and Field Club* **35**: 249 and 451-456.

Colston, A. *et al*. 1996. *Northamptonshire's Red Data Book*. The Wildlife Trust for Northamptonshire.

Emmet, A. M., Heath, J., 1990. *The Moths and Butterflies of Great Britain and Ireland Volume* 7, *part* 1. Harley Books. Also for the sequence of the butterflies.

Heath, J., 1975. *Lepidoptera. In*: Peterken, G. F. & Welsh, R. C. (Eds). *Bedford Purlieus: its history, ecology and management*, pp. 152-153. Monks Wood Experimental Station Symposium no. 7.

K.& D.N.H.S., Kettering and District Natural History Society. The society was formed in 1905 and the entomological section was formed in 1907. Record cards and associated archive material were started in 1917 and continued until 1958 and then updated by personal communication with members. All subsequent quoted records are from these sources unless otherwise stated.

Pilcher, R. E. M., 1961-. Unpublished paper. The Lepidoptera of Castor Hanglands and Ailsworth Heath 1911-1960.

Rothschild, M., 1975. The Swallowtail butterfly *Papilio machaon britannicus* Seitz in Northamptonshire (and status of some butterflies at Ashton Wold). *Entomologists' Rec. J. Var.* **87**: 177-179.

Skinner, B., 1998. *Colour Identification Guide to Moths of the British Isles* (second edition). Viking. For the sequence, English and scientific names of the moths.

South, R., 1906. *The Butterflies of the British Isles*. F.Warne.

Sturgess, W., 1857. *Steropes paniscus*. *Entomologist's Weekly Inteligencer* **2**:124 and 155.

– , 1858. Captures at Kettering. *Entomologist's Weekly Inteligencer* **4**:111.

– , 1859. Variety of *Apature Iris*. *Entomologist's Weekly Inteligencer* **6**:155.

Tonks, E., 1989. *Ironstone Quarries of the Midlands*. Runpast Publications.

Wallis, E. F., 1880-. Unpublished records and papers.

– , 1908-1910. The Lepidoptera of Northamptonshire. *The Journal of the Northamptonshire Natural History Society* 15: 74, 72, 71, 23 and 26. 14: 281, 280, 238 and 276.

Whitwell, J., 1845. Captures of lepidopterous insects near Peterborough. *Zoologist* 845-846.

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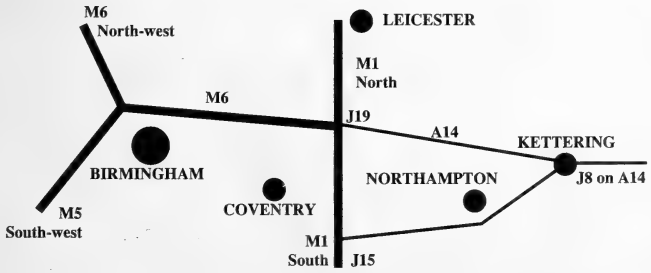

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The Bartlett Room is sited in the Meetings Rooms complex that is over the road from the main entrance to the Zoo and about 100 yards to the East.

PROGRAMME

10.00 am Doors open for members to sign in. Tea and coffee will be available. Coats may be left in an unsupervised cloakroom at your own risk – the AES will not accept liability in case of a problem occurring.

11.00 am Welcoming address, followed by a lecture.

12.00 noon The Annual General Meeting will take place. Nominations for election to the Society's Council or as a Serving Officer of the Society should be forwarded to the Secretary along with the names of two nominators who should be members of the Society.

The AGM will be followed by lunch.
There will be two further lectures in the afternoon.

The Zoo opens at 10.00am. Those attending the AGM and Members' Day may also have free entry to the Zoo (access from the Meeting Rooms is via a subway).

There is a Licensed Restaurant in the Zoo where lunch may be purchased, there is also a Fish and Chip stall near the "Web of Life" Exhibition. Packed lunches may be eaten in the Foyer or outside, they should not be eaten in the lecture halls.

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Bug Club Members must be accompanied by a parent and should bring their 2002 BC membership card.

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Bug Club members – There will be tours behind the scenes of the "Web of Life Exhibition". These will be happening throughout the day in small groups of eight members. Groups will have a time for entry, and at least two adults are to accompany each group. If you wish to take part, please say so when you sign in. Other activities will also be available.

There will be a talk and demonstration on Spiders in the Zoo at 2.00pm that Bug Club members may attend.

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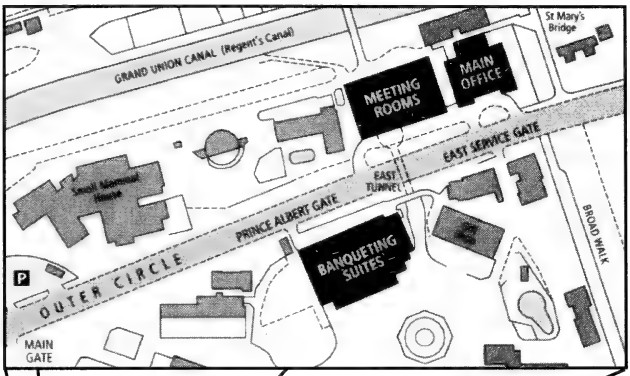

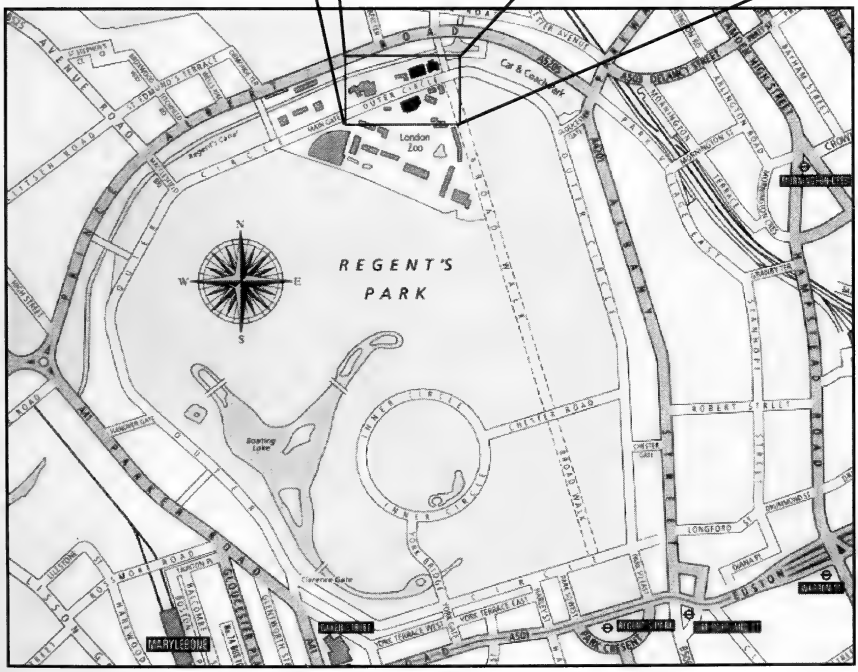

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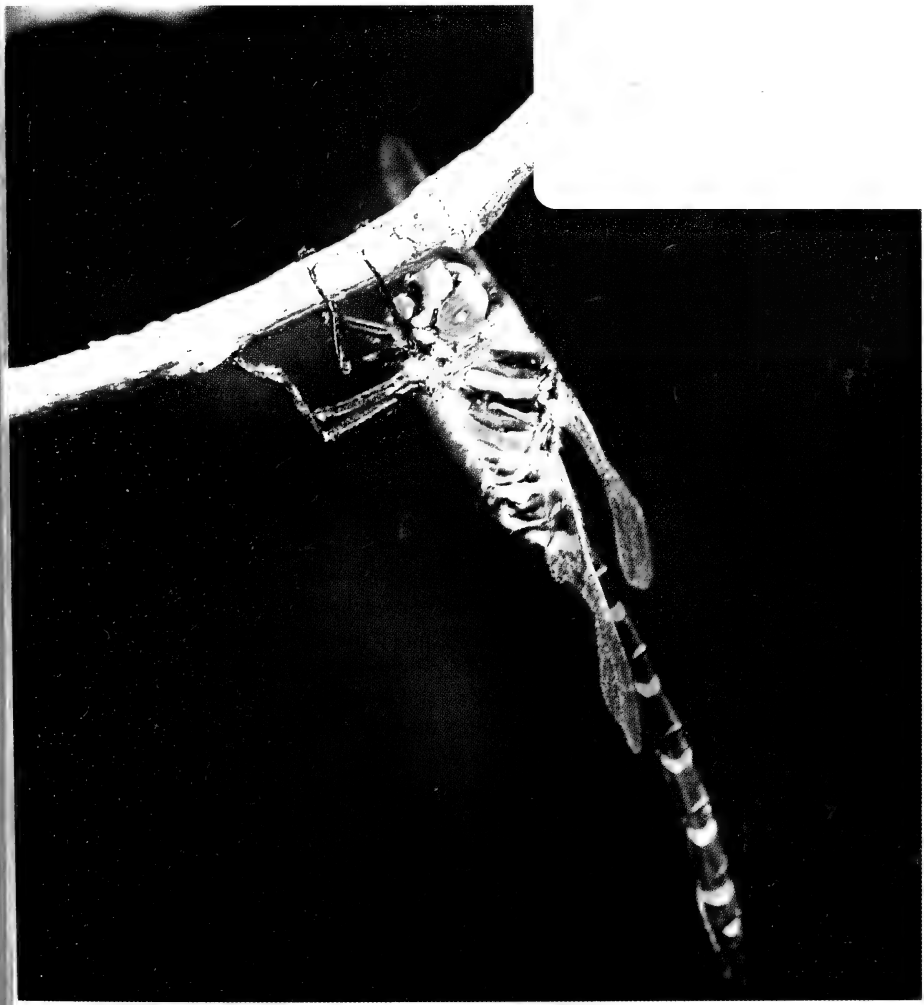

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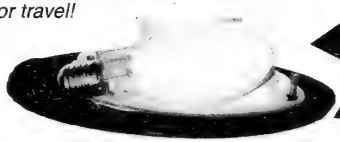

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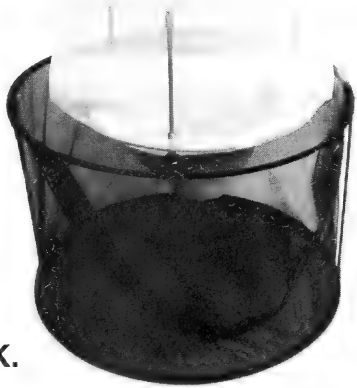

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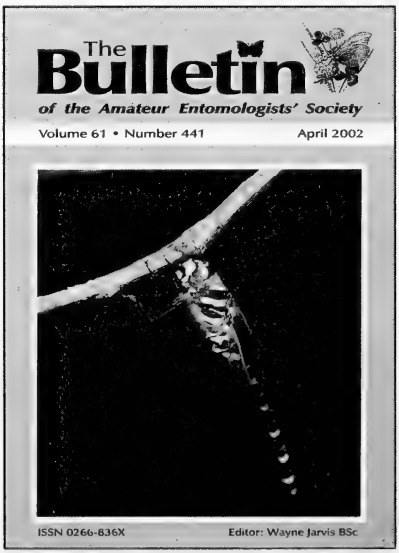

Photo: Nick Holford.

The cover of the *Bulletin* features the *Cordulegaster boltonii,* Golden ringed dragonfly. Its average body length of 74mm in males and 84mm in females, and its average wingspan of 101mm make this species one of our largest dragonflies. It has a black body, with lemon-yellow ring markings along its length. They are quite fast fliers, flying in a more or less straight line about 10-30cms above the water. They do not have distinct territories, but do adopt a specific length of stream as a home range. They are found from late May to mid-September in moorland and heathland areas of Britain (but not in eastern areas), where they are reasonably common. The adults are often encountered away from water, flying over moorland vegetation or woodland rides looking for food.

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Observing butterflies, Switzerland 2001

by Tony Steele (4106)

57 Westfield Road, Barneburst, Kent, DA7 6LR.

Following our successful visit to the Bernese Oberland in 2000, in which the continued existence of the Swiss race of De Lesse's brassy ringlet (*Erebia nivalis*) was confirmed, to my wife Margaret who spotted two, a return visit was undertaken in 2001, from the 4th to 11th August. On this trip we were hoping to see the only known Swiss colony of the Sudeten ringlet (*Erebia sudetica*, subspecies *inalpina*). Once again we were based in the lively mountain resort of Grindelwald.

With the weather in the Grindelwald valley on the first day being cool with low cloud, a trip up the Jungfraujoch was taken. On venturing out onto the glacier we were met with clear skies and warm temperatures, despite being at an altitude of 11,333 feet. On past visits we have seen Small tortoiseshells (*Aglais urticae*) sunning themselves here, but this time we only saw the ubiquitous Alpine chough birds being fed by fellow tourists. The following day the local weather was again unsettled so we decided to visit the Brienzer Rothorn high above Lake Brienz. By the time we had boarded the train the clouds had began to gather at this location. The narrow gauge steam train chuffed its way up at a leisurely pace, which enabled us to spot at the trackside Marbled white (*Melanargia galathea*), Titania's fritillary (*Clossiana titania*) and Arran brown (*Erebia ligea*), one of which flew into the carriage, much to the amusement of other passengers. Upon reaching the summit the weather had closed in completely with sleet and rain which put paid to any butterfly watching.

The next day dawned sunny and warm so a walk was taken from Allmendhubel, situated above Murren, to Lauterbrunnen via Winteregg. We started off proceeding through high alpine meadows and the first species encountered were Mountain ringlet (*Erebia epiphron*), and this was quickly followed by Swallowtail (*Papilio machaon*), Small blue (*Cupido minimus*), Dark green fritillary (*Argynnis aglaja*) and Yellow-spotted ringlet (*Erebia manto*). As we passed Winteregg the path went

through some coniferous woodland, in which there were large clearings filled with flowers, and here we recorded Silver-spotted skipper (*Hesperia comma*), High brown fritillary (*Fabriciana adippe*), Wood white (*Leptidea sinapis*), Large ringlet (*Erebia euryale*) and Scotch argus (*Erebia aethiops*).

For the last three days of our holiday the weather again deteriorated with low cloud and mist, but this did not deter us from attempting to seek out our target species, the Sudeten ringlet. On one of the walks the cloud was so low we were actually walking through it! Under these rather damp conditions several species were found sheltering in the wet and they included Common brassy ringlet (*Erebia melampus*), Large ringlet, Large wall brown (*Lasiommata maera*), Black-veined white (*Aporia crataegi*), and the only Knapweed fritillary (*Mellitaea phoebe*) of the holiday, which was spotted by Margaret. As we failed to find the Sudeten ringlet on this trip, we shall be returning in 2002. A site and species list is available upon receipt of a SAE.

Re: Garden tiger

by Barry Ottewell (1856)

Crossley's Patch, Chadwell, Melton Mowbray, Leicester LE14 4QL.

As a further observation not connected with the above but to the letter on page 188 of the *Bulletin*: **60** – my experience has been the same as Graham Best's re the Garden tiger. My surroundings are totally rural but the larvae were often seen crossing the road. I haven't seen any larvae or adults for years but plenty of Buff ermines. I also have a theory, which seems to hold good hereabouts: the Large white butterfly (*Pieris brassicae*) no longer overwinters successfully here. As a boy (1940s) the pupae could be found under any ledge or windowsill but, although the larvae are common in autumn I have not seen an adult in the spring before the first Red admiral migrants have arrived in June, and these early ones now are very large, mostly female and, I suspect, migrants. I also suspect that Blue tits etc are becoming more sophisticated or their alternative winter food scarcer.

A menu of Phasmid Fodder

by Chris Haes (5849)

6 Hatch's Hill, Angarrack, Hayle, Cornwall TR27 5HY.

For the last ten plus years, I have had three species of phasmids in small colonies in my mainly winter-mild and damp garden at Angarrack, near Hayle in West Cornwall.

As this is also a plantsman's garden with a good range of plant species, these phasmids have had a considerable selection of suitable foodplants, beyond the favoured choice of bramble, wild in the massive *Escallonia* hedges (which were here when I came in 1988), and the "soft leaved" conifers; semi dwarf or juvenile forms of *Thuja* and *Chamaecyparis*.

What is particularly interesting is that the phasmid colonies have selected certain species, and persisted on them, with spring-hatched nymphs maturing around June to early August, and a few persisting into the following winter.

The three phasmid species are two New Zealanders, *Acanthoxyla inermis* and *A geisovii* and the European *Bacillus rossius,* in its parthenogenetic form.

In the list of recorded foodplants below, these are listed respectively as I, G and R, from their specific names.

One noteworthy side effect, either from climate or food, or a combination of both, is that *A. geisovii* particularly, and *A. inermis* to some extent, have produced a high proportion (perhaps a third of adults) of strikingly mottled colour forms: a phenomenon noted by Malcolm Lee (Lee, 1995). The most conspicuous form here is the almost lichen-patterned form of *A. geisovii,* where the green, more spiny form has produced this in both green and brown ground colours. The latter, however, is never the dark brown of the lightly spined brown variety, which does not seem to vary quite so much in colour here. *B. rossius* has never produced such colour variation, but with its yellow or purple sides can be very colourful by adulthood.

Although a wide range of foodplants is available, I have not found them feeding on *Pittosporum tenuifolium, Potentilla fruticosa*; or herbaceous plants such as *Kentranthus rubra* Spur Valerian (noted in other localities by Lee and others); *Escallonia*, Hollies, Ivies, or *Viburnum* spp. such as *laurustinus* (*V. tinus*) clearly have no food value to any species in this garden.

The following foodplants (species in bold are particularly favoured), as named in Hillier's *Manual of Trees and Shrubs,* are:

Foodplant	**Species**
(a) Flowering Shrubs	
***Cistus* spp. and hybrids** (Cistaceae)	R
Cistus spp. and hybrids (Cistaceae)	I, G
Corylopsis willmottiae (Hamamelidaceae)	I, G
Embothrium lanceolatum (Proteaceae)	I
Erica spp. and varieties below (Ericaceae)	
E. arborea "Alpina", Tree heath	I, G, R
E. lusitanica "Portugal heath"	I, G, R
E. erigena (*mediterranea*)	I, G, R
E. terminalis Corsican heath	I, G
E. vagans Cornish heath	G
Eucalyptus (Myrtaceae)	
E. coccifera	I, G
Eucryphia x *intermedia* (Euchryphiaceae)	I, G
Fuchsia magellanica culivars (Onograceae)	I, G
Hypericum patulum culivars (Guttiferae)	I, G, R
Leptospermum scoparium cultivars (Myrtaceae)	I, G
Myrtus communis cultivars (Myrtaceae)	I, G, R
Rosa wichuriana cultivars, particularly "Crimson rambler" (Rosaceae)	I, G
***Rubus fruticosus* Blackberry** (Rosaceae)	I, G, R
***R. idaeus* Raspberry**	I, G, R
Salix lanata "Stuartii" (Salicaceae)	I, G
(b) Conifers	
***Chamaecyparis lawsoniana* cultivars, particularly "Elwoodii"** (Cupressaceae)	I, G
Chamaecyparis lawsoniana cultivars, particularly "Elwoodii" (Cupressaceae)	R
Cryptomeria japonica "Elegans" (Taxodiaceae)	I, G

Thuja occidentalis cultivars (Cupressaceae)	I, G, R
T. orientalis cultivars	I, G, R

Rubus is a major pabulum for all species, as are *Chamaecyparis* for the two New Zealand ones and *Cistus* for *B. rossius*.

Reference

Lee, M. (1995). A survey into the distribution of the stick insects of Britain. *Phasmid Studies* 4, 14-23.

Roesel's bush cricket in Surrey

by Clive Martin (7962)

Sheri, Mill Lane, Felbridge, East Grinstead, West Sussex RH19 2PE.

On 26th July 2001 I managed to take this photo of a female Roesel's bush cricket, *Metrioptera roeselii*. It was in a field of rough grassland, small trees and scrub, TQ 373428. There were also at least five males calling from various positions. This year is the first time that I have seen *M. roeselii* here, although I have owned this field since 1985.

Malaise Trapping – some tips & tricks

by Chris Raper (7540)

22 Beech Road, Purley-on-Thames, Reading, Berkshire RG8 8DS.
E-mail: chris.raper@bartslock.org.uk

and Darren J. Mann

Hope Entomological Collections, Oxford University Museum of Natural History, Parks Road, Oxford, OX1 3PW.
E-mail: darren.mann@oum.ox.ac.uk

What is a Malaise Trap?

Invented by the Swedish entomologist Rene Malaise, the design is remarkably simple and is based on the shape of an old-fashioned two-man tent. The anecdotal tale goes that when Rene returned to his camp after a hard day's collecting, he noticed that there were more insects in his tent than he had caught with his net! He immediately saw the potential and decided to make a trap that exploited the design of his tent. Since then entomologists, most notably Henry Townes in the USA, have fine-tuned the design.

The Malaise Trap belongs to the group of collecting techniques known as Flight-Intercept Traps (FIT's), as no lures or baits are used – you just put it up and wait. Any flying insect that blunders into the main vertical sheet of netting will instinctively fly up towards the light where a tilted, pitched roof guides it towards the neck of the collecting bottle.

The only problem you normally encounter is being able to deal with the vast number of insects it catches per week! It has been estimated that one week's Malaise catch in Britain may take up to three weeks to sort and mount (if all material is done), the time involved in follow-up identification could be as long as one year (Mann & McGavin, pers. obs), and these are conservative estimates. Abroad these figures grow exponentially. A survey conducted at Burnham Beeches has so far produced over 1,300 species of Diptera (based on key groups of approximately 60% of the UK fauna). Due to the large quantities of material generated through the use of Malaise Traps, they should only be used as part of survey work, or if the user has other entomologists willing to take the surplus material.

What is it used for?

Malaise Traps act in a passive way (almost, see comments below) and since they can be left *in situ* (at most sites), they collect material all times of day and in all weather conditions. They are therefore very

useful in inventory surveys (*i.e.* those intended on producing an exhaustive species list). However, due to the nature of the design certain taxa (beetles [Coleoptera] and bugs [Hemiptera]) are lost as they bounce off the central panel and land on the ground and run away. However, since the Malaise trap works as a FIT, trays can be placed at the bottom of the central panel (containing a preservative), these will collect beetles, bugs etc that hit the central panel and fall down.

Hymenoptera (bees & wasps): By far the most prolific order including vast numbers of small parasitic wasps (mostly Chalcidoidea).

Diptera (flies): Running a close second to the wasps but still present in huge numbers.

Lepidoptera (moths & butterflies): Relatively uncommon – in the first year of use, one (CR) caught a few satyrid butterflies and a hawk moth but the catch was mainly a few small micro moths.

Neuroptera (lacewings): Not very common but you usually get some in each trap.

Coleoptera (beetles): Usually very uncommon but pollen beetles (Nitidulidae: *Melegethes* species) are sometimes abundant.

Orthoptera (grasshoppers & crickets): One or two per trap.

Odonata (damselflies & dragonflies): about one or two damselflies per year – dragonflies are generally too big to fit through the neck of the collecting bottle!

How is it used?

The trap is made from fine netting, ribbon loops and guy-ropes – all supported by a two-metre wooden pole and some strong tent pegs. The collecting vessel attaches to the tent using a specially made metal bracket, held in place by a metal ring-fastener. For transport the whole thing packs down very small and the poll can either be cut from surrounding vegetation or made from an old broom handle. The only equipment needed is a small saw (to cut the pole to size) and a screwdriver (to tighten the ring fasteners).

The structure is usually erected at 90° to natural insect flight paths, such as hedges, woodland rides or fence-lines. Do not place the trap in areas that have grazing livestock, as the animals (especially cattle) have a tendency to knock down the trap. You should make sure that the pitch of the roof and any creases in the fabric run upwards to the collecting bottle. A good tip is to point the bottle towards the brightest

part of the sky – in the northern hemisphere this is usually due south. However, you can get away with any orientation if the lower end is up against a shady hedge. But saying this, a Malaise trap will work well in the middle of a dark rainforest, so it is probably wise to experiment and see what works for you.

Guy ropes can usually be pegged directly into the ground but sometimes you have to improvise by tying the ropes to handy objects when trapping in swamp or in areas where the ground is very hard or on sand. The important thing is that the netting is held taut and that the roof slopes at a steep enough pitch so that insects can fly in under it but not turn and fly out too easily.

The colour of a Malaise Trap will have an affect on the trap results. All black traps have been shown to act in the most passive way, although they are attractive to blood feeding Diptera such as horse flies (Tabanidae). It has been shown that yellow traps catch more "flower visiting insects", plus the usual Malaise trap catch. If the purpose of the trapping is to maximise catch, then a yellow coloured trap may prove more effective, however, if comparisons between sites or trapping stations is to be made, traps of similar colour should be used at both sites.

Malaise Traps can also be fixed with rigid frames and hoisted up into the canopy. This method has proved very effective in the tropics, though it is seldom used in the UK. However, an aerial combination Malaise and "window trap", (that is a Malaise trap with a liquid-filled collecting tray underneath) was used by the entomology staff at the National Museum and Galleries of Wales during their Welsh Parklands Survey with very good results, including several new species of beetle to Wales.

The collecting bottle can either be left dry with dry inserts (small net bags) with a suitable killing agent such as Vapona® or can be filled with a fluid preservative such as water mixed with Ethylene glycol (anti-freeze), IMS (Industrial Methylated Spirit = alcohol), or just water (this has to be emptied daily otherwise specimens become damaged). 75% IMS is the preferred preservative as anti-freeze may leave a greasy deposit on very small specimens. If IMS is the preservative and is to be left for a period of a week or more, adding a small amount of glycerol will reduce the evaporation rate with no detrimental effects to the specimens. Traps can be left *in situ* for long periods of time, however it is important to remove the collecting head and specimens and start afresh every week (or shorter in peak collecting periods), otherwise specimens may begin to deteriorate.

Handling Specimens from the Malaise Trap

Once back home the sample can be sorted, using pointed forceps – you can use soft forceps if you are worried about damaging the specimens. The sample can be poured into a tray and the interesting material removed into a new storage vessel, such as a petri-dish (short-term) or glass, stoppered bottle (longer-term). It is best to replace the alcohol in the remaining sample if it is to be stored for any length of time, as the concentration of the alcohol reduces with increased quantity of material within it and with time.

Some groups, like Ephemeroptera (mayflies) and Trichoptera (caddis flies), are best stored long-term in alcohol to preserve their soft structures and can be identified while still wet. However, this is not true of the majority of insect groups like Diptera (flies) and Hymenoptera (bees, wasps, ants, sawflies and ichneumons), where body structures are relatively robust and the identification keys often rely on viewing a dry specimen. These groups are often keyed using fine hairs, subtle colouration or fine dusting, none of which are easy to view on a wet specimen. It is always best to consult the relevant identification literature, which should give an idea of the best method of storage for a particular group.

The transition from wet to dry can be fraught with problems – for instance if you take a small specimen out with a pair of tweezers the first problem you get is that the wings will usually collapse under the surface tension of the liquid! When these specimens dry, the wings are often twisted and thus the characters for identification obscured.

Larger specimens can be picked out carefully by the legs and dragged across wet filter paper to straighten their wings before leaving to dry. But very small, or fragile specimens must be treated with more care. First move them into a petri-dish with a little alcohol in it. Then tear up small pieces of filter paper and slide one into the dish. Under the microscope gently drag the specimens onto the filter paper and, when you have arranged them over the paper, gently lift it out with tweezers allowing the surplus alcohol to run off – if you have done it right the specimens will be left on the paper. They will be dry in about ten minutes at room temperature. (This tip is courtesy of Dr Donald Quicke, Imperial College, Silwood Park, Ascot.) Once the specimen is mounted it is a good idea to put them into a container with Ethyl acetate fumes (in a similar manner to a relaxing box, but using polythene based boxes, since Ethyl acetate will melt polystyrene based boxes). The reason for this is that with time the exoskeleton of insects becomes soft in alcohol; the Ethyl acetate will reduce this problem.

Another problem you may have is that the softer-bodied insects often get very dehydrated when left in alcohol for long periods. When the alcohol dries out the eyes & abdomen can collapse and make them unidentifiable. This is a tricky problem but you can avoid it by reducing the time the insects are exposed to the alcohol – I empty the trap every threes to seven days and remove and mount soft things that evening. Also, IMS is 95% alcohol and this preserves for very long periods but I often dilute it to 70% (by adding a little distilled water) for trapping and this reduces dehydration – but remember not to use 70% for long term storage otherwise they might decay!

There are a number of ways of re-hydrating specimens or treating them to avoid the shrivelling affects, such Critical Point Drying and some chemical treatments (e.g. 2-Ethoxy Ethanol). The obvious one (and the one I use [CR]) is to move them into water for a day or so to re-hydrate. They never "relax" like a dry specimen would but they are good enough to manipulate so that you can ID them. Another method is to transfer them to ethyl acetate for a few hours and then dry them. This is apparently a very good method but it leaves the resulting specimens very brittle so you must take great care with them afterwards – and ethyl acetate isn't a particularly pleasant chemical to use at home!

Suppliers

In the UK IMS is available from most high-street chemists but to buy it you must by over 18 and you must first get a license from Customs & Excise. Licences for up to ten litres/year are freely given for "hobbyist" use and the procedure is surprisingly simple. Licenses do not need renewing each year and run forever. When you purchase your IMS just write out a purchase order and hand it to the chemist with a copy of your certificate and a "statement of authority to receive IMS" – a simple, standardised letter, the text of which is printed in the license application form.

Distilled Water is available at most garages – sold to top up car batteries.

None of these chemicals are hazardous if used correctly in a well-ventilated room but always read the labels and documentation that come with them for up to date safety information.

You can purchase Malaise Traps and their component parts from Bob George at Marris House Nets 54 Richmond Park Avenue, Bournemouth, BH8 9DR, Tel: 01202 515238.

Camberwell beauty

by Su Portman (11549)

5/2 Ginsterstraße, Bergen 29303, Lohheide, Germany.

I was sitting outside my office in my lunch break, happily chewing a sandwich when something caught my eye. What looked at first like a black butterfly with a bright yellow rim all the way around the inner wing edges was heading right for me!

I managed to get a good look at it, and made a quick sketch, I had never seen a butterfly like it before. The black was actually purple.

As soon as I got home, out came the books to identify the insect. Carl asked me what it looked like, and when I told him started cursing me! I was informed (much to my amazement that Carl knew what it was!) that I had seen a Camberwell beauty. I found a picture, Bingo! He was right. This butterfly has been Carl's favourite since boyhood (he used to have a picture of one) and he has never seen one in the flesh.

I have!

Unseasonal Admiral

by Don McNamara (5537)

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Whilst walking by Denham Deep lock, Denham, Bucks on 25th November 2001, near the spot where the River Frays runs under the canal, a beautiful and unexpected Red admiral flew in and settled by the lock gate, taking advantage of the weak but warm midday sun. Having seen a kingfisher earlier, this was another unexpected pleasure.

Unusual immigrant!

by Frank Wigzell (12064)

Flat 1, 24 Hepburn Gardens, St. Andrews, Fife KY16 9DE.

Unusual immigrant (or not) – One *Graphosoma italicum* (Muller, see *Collins Field Guide 93*) was found resting on the bonnet of my white car in August 2000. The size, shape and colouring like a soccer jersey with red and black stripes seemed to make it unmistakable.

Can someone tell a novice if this sight is unusual and if anyone else in East Fife, Perth or Angus made a similar observation at the time. Answers to the *Bulletin* or to 01334 475925.

How many legs does the alien have?

by Isabella Brey

A couple of months ago I asked the local newspaper for help with a survey I have been conducting as part of my PhD. I submitted a factually correct, reasonably written report, which, once published, turned out as follows:

> ***Aliens running about in the dark***
>
> *The search is on in Swansea for alien hoppers. The creatures have seven pairs of legs, are brown or black and flat, are one centimetre long and will jump frantically when disturbed.*
>
> *The landhopper, an insect, was inadvertently imported from Australia around 100 years ago. Now Swansea University is trying to find out how many there are in the area.*
>
> *"The landhopper is a close relative of the sandhopper, as found under seaweed on the beach," said Isabella Brey, of the university school of biological sciences. "It leads a secretive lifestyle, feeding on decaying plant material among fallen leaves and in the top layer of the soil. It occurs in woodlands as well as in gardens."*
>
> *The hopper population originated in Caswell in the 19th Century and has since spread as far as West Cross. A further colony is established in Tycoch. "The landhopper is very sensitive to frost, which has limited its spread," added Ms Brey.*
>
> *A research project at the university is looking at whether the insect gets eaten by British birds and whether it eats food woodlice would otherwise consume.*

Apparently, certain changes had to be made to my report because everything published in a newspaper must be written by a *proper* journalist (member of some organisation or other). OK, that's alright with me. I can also live with changes in style that I wouldn't have made as well as omitted capitalisation, but calling my fourteen legged amphipods INSECTS had me jumping up and down. Moreover, it was Saturday afternoon when I first saw the article, so there wasn't anyone in the paper's head office I could express my resentment to. After developing a high blood pressure and fretting for a while, I decided there was nothing I could do just then, but made up my mind to do my utmost to raise people's awareness of landhopper/insect/leg issue.

So just in case you ever get asked anything about landhoppers or come across one in the field, here is all you need to know to impress your fellow persons.

The animal in question is *Arcitalitrus dorrieni*. It is a Crustacean (order Amphipoda, family Talitridae). It reaches a size of 10-12mm, is laterally flattened and usually dark brown with an iridescent sheen. It has seven pairs of legs (!). The first record in Britain was taken in 1924 by Major A. Dorrien-Smith on the Isles of Scilly.

It is thought that *A. dorrieni* was introduced along with tree ferns, which were very popular imports from Australia in Victorian times. They came as mature plants wrapped in leaf litter for protection. Over time, the landhoppers living in this litter spread out of the botanic/manor house gardens into the surrounding woodlands. Since the original introduction/s spread has taken place both by natural dispersal and by human interference (mostly buying and selling plants from 'infested' nurseries).

There are numerous species of landhopper in the southern hemisphere, but only *A. dorrieni* has become established outdoors in

Britain and Ireland (a few other species have been reported from greenhouses, e.g. those in Kew Gardens).

A. dorrieni, like all landhoppers, is sensitive to low winter temperatures. As a consequence, it is more successful in the milder regions along the West Coast of mainland Britain than in other parts. There are numerous records from the West Country and South Wales, but *A.dorrieni* has also been found on Colonsay (Inner Hebrides) and relatively far inland in Ireland. My research indicates that the landhoppers may to be in the process of adapting to the lower temperatures they encounter in the British Isles.

Even though landhoppers tend to occur in large numbers, particularly in gardens, they do not constitute a danger to plants, since they feed on decaying matter only (and no, landhoppers do not bite people). It is not yet known whether the presence of landhoppers has an influence on the native leaf-litter/soil fauna. Hopefully, my research will provide an answer to this question. I am also investigating whether, and to what extent, landhoppers have become part of the food chain.

If you come across any landhoppers in your garden or in the field, do let me know either by e-mail (landhoppers@yahoo.co.uk) or give me a ring on (01792) 295036 and I will add your record to the map.

A persistent winter moth

by Jan Koryszko (6089)

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On the evening of 21st November 1999 I noticed a male Winter moth, *Operophtera brumata* Linnaeus, flying outside my lounge window, which was slightly ajar. At first I thought it was attracted to my lounge light but it kept fluttering by the open window. On closer inspection I could see that an almost wingless female of the same species had managed to get inside my window frame. She must have climbed up the wall from my *pyracantha* bushes in which I often find female Winter moths waiting for the males to arrive – this particular male was most persistent in trying to get at her. This seems to show that most species of Lepidoptera have a very keen sense of locating a mate and their foodplants in the most unlikeliest of spots which sometimes are in isolated areas.

Early Days

by Rob Partridge (8956)

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When I was a toddler, first allowed into the garden on my own, though no doubt closely observed from the kitchen window, I spent much of the time not toddling but sitting. My greatest pleasure was to examine things, particularly things that crawled, slithered and wriggled, and one of my first words, apparently, was "pillarcatter". I do not remember any of this, of course, but it became family folklore, nonetheless.

I have met several people whose interest in natural history began as early as this; of all hobbies it seems to be one to which certain people are predisposed from their earliest years. I wonder why? What is it about creatures that so fascinates a few of us? Their difference from us, their otherness, or some sense of their being like us, companions on this extraordinary journey through time and space? No doubt a psychologist somewhere thinks he has the answer.

Personally, I believe that the instinct to hunt has something to do with it. Children always want to capture things to get a closer look, and the chase is always exciting. When the moment comes to release your captive, as someone always tells you you should, it is tinged with a little sadness because that thing of beauty, a joy, will be gone forever. Eventually, if you are one of the fascinated few, you will discover ways of keeping them, either alive so that you come to learn something of their ways, or preserved for posterity – and in that, too, there is more than a little sadness.

When I was five we moved from the bungalow with the wriggly garden to a council house on the edge of a nearby town. The houses had been built quite recently and the estate projected peninsula-like into the surrounding countryside, with fields and orchards on three sides. In the late 1950s and early 1960s the world was a different place in many ways: young children were allowed to play out for hours without supervision; television had not begun to dominate our lives and the effects of the post-war agricultural revolution that has done so much damage to the wider countryside were as yet barely visible. On Sunday afternoons it was not unusual for the family to walk along the lanes and droves that ran through the fields, nor to meet other families doing the same. On these walks I made some of my earliest butterfly records, seeing Meadow browns and Ringlets among the long grasses

of high summer and identifying them from my Observer's book when back at home.

Another mystery, at least for me, was the Great Divide amongst lepidopterists. Not only was one instinctively attracted to these insects – almost invariably one was either a moth or a butterfly person; some claim to be equally interested in both but I never really believe them – as with all the important questions in life, eventually you have to make a choice if it has not, in some way or another, already been made for you. This choice was made for me one morning when I walked down the Back Road, a narrow lane that ran behind our houses. Another boy was examining some bushes that formed part of the hedge of the house closest to the lane. At that time there was a caterpillar craze and everyone seemed to be collecting them. I stopped and he showed me what he had already found. It turned out to be the most extraordinary animal I had ever seen – a fully grown larva of the Puss moth. The distinct air of danger that surrounds this particular caterpillar when it rears up at you made it all the more enthralling – I had to have one! Long after the other boy had departed, I was still there searching the poplar saplings. There were not many of them, so I was probably on the third sweep when I noticed a leaf with a crinkled edge that turned out to be a half-grown larva. With its enormous, phoney head, its lashing forked tail and its reputation for chemical defence, this has to be one of the weirdest larvae in the world, let alone England, and now I had one of my own. It pupated on a piece of plywood and produced a huge female the following spring. Finding one today is still a thrill, not least because they are, in my opinion, much less common than they used to be.

The poplars held another treasure. Regular, that is twice-daily, visits began to produce eggs and then larvae of the Poplar hawk, including a surprising number of the beautiful form with reddish markings along the flanks. I'm sure that these early experiences left me with a lasting weakness for big caterpillars; with the best will in the world, how can anyone get excited about a tortrix larva a few millimetres long or a nepticulid *inside* a leaf when a three inch *Laothoe populi* may be lurking on the next spray of poplar?

These early successes did nothing to quench my growing enthusiasm – quite the reverse. Hawk moths – the Poplar, the Eyed and the Lime – naturally became the target of many expeditions around the estate; their size, their beauty and even their rather romantic association with the noblest of birds were reason enough, and, of course, the caterpillars are

sometimes enormous. They also brought about a rather embarrassing mistake. One evening in summer I had been out until dusk by the orchard and noticed several huge moths winging their way back and forth over the trees. What species could they be? They looked so large I wondered if they were not new to science, and I had discovered them this close to our house. By the time I arrived home it was too late to drag even my patient parents back as witnesses, but the next night they were there, too early, staring up at the empty sky. Eventually the light began to fade and I imagine an expectant hush descended. Then the first one appeared, fluttering along the tops of the ancient apple trees, followed in moments by others. I turned to them in triumph and ... I cannot remember precisely who told me they were bats but I'm sure they were very understanding.

By now I had acquired more books, the sort that brought a little more sophistication to my searches – *The Young Specialist Looks At ... Butterflies* by Georg Warnecke was especially useful. From some other source I learned that the Privet hawk larva of the suburban variety often betrays himself by allowing piles of his droppings to accumulate beneath the hedges he favours. Now I had no idea whether this moth actually existed in my locality. We had no light traps to make life easy but the optimism of the young knows no bounds. I began to walk the streets of our estate and then, in desperation, those of the neighbouring estate where a gang of not-always-that-friendly boys lived and fought. No lamp-posts were bumped into but I must have made a rather melancholy figure as I wandered about alone and palely-loitering, sometimes on my hands and knees, beneath the dry hedges where dogs like to wee.

The first caterpillar I found was a big one, almost fully grown, and it was some moments before I could bring myself to remove it from the privet stem in front of me – I just wanted to go on admiring the lilac and white stripes that somehow contributed to the amazing camouflage. I tormented myself by looking away and then back; for a second or two the caterpillar would be invisible and I had to search again with my eyes. That was how I found the second one, just inches from the first. There was barely room in the jam jar for monsters like these and – "What do you think you're doing?" The large lady looked none too pleased as she peered over her garden gate. Before I could stammer a reply, she pointed and exclaimed, "You're breaking bits off of my 'edge!"

That was undeniable – the evidence was in my hands. I began to explain. When she said, "I can't see any caterpillars," I held out the jar

for her inspection. The effect was dramatic, to say the least. "On *our* 'edge?" she repeated, several times, and then, "Well, you'd better get them all off. Look at the sting on it! We don't want anything like that round 'ere. Come round into the garden. Do you need some more jars?"

I think that I found several more, and the lady's reaction confirmed what I had already begun to suspect – that an interest in entomology goes hand-in-hand with gaining a reputation as an eccentric. But what matter? Those larvae produced such marvellous pupae – purple-brown, glossy, with a proboscis, and, in my eyes, absolutely enormous. I'm sure they all produced equally marvellous moths the following June.

Only fishing – another lifelong interest – could compete with Lepidoptera in those early years, and it is plain that the two have much in common. Many of the obituaries of the older entomologists reveal that they were anglers, and it isn't at all unusual to find entomologists who began with an interest in the flies they were imitating in order to catch trout. Never try to combine the activities, though – I guarantee you will fail in both and leave the field dissatisfied. Choose carefully according to weather and season, take only the one set of equipment and never look back.

Our "rarities" were laughable by modern standards. About a year after discovering the Privet hawks, I remember searching some flowering cherry trees that lined one of the avenues, oddly enough in the company of two or three boys from the rough estate who turned out to be more serious about wildlife than my original companions. We examined the leaves carefully, hoping to find larvae or eggs, oblivious to the passing traffic. I don't know how much we had found but I do recall discovering a fine caterpillar of a type I had not seen before – it was colourful, with pairs of red markings along the flanks, tufts of fine hairs, a sizeable hump and a beautiful lemon-yellow stripe along the back. Naturally I showed it to the others, and the oldest boy, whom we all acknowledged as an expert, considered it closely – too closely for my liking as he seemed to be growing quite attached to it. Eventually he announced – quite correctly – that it was the larva of the Grey dagger and returned it to me. There was a distinct feeling of envy about this discovery and the search was resumed with considerable seriousness for a time.

Today, with m.v. lights, that species is so common over most of the country that it appears once in site lists and is then forgotten. Any that fall into the beating tray are unceremoniously tipped back into the

herbage and probably not entered into most people's notebooks, yet it is an attractive moth when freshly-emerged and well worth the effort of rearing.

And we should not take any of our species for granted, be they ever so common today. As a youth I once found a Lappet moth dying in the gutter. I took it home and tried various means of reviving it but without success, so it joined my small collection in a shoebox. With the orchards and undamaged hedgerows that surrounded us, I am sure it was a common species. In the last ten years, living not so far away and further into the countryside, I have found a small caterpillar on a single occasion, one which failed to overwinter. Most springs I have gone out and searched the likeliest-looking bushes of blackthorn and hawthorn after dark as instructed by all the authorities but without success, and never once has one come to the light trap that runs throughout the moth's season. It may be here but if it does appear I shall consider it a rarity, and I suspect that is its true status now. As for the Garden tiger ... P. B. M. Allan's comment about the Lobster moth come to mind – "Perhaps he is one of those moths that resent the advance of civilisation or the increase in the human race." I am afraid that these words apply only too well to many of our larger moths today.

As one writes these things, more and more memories return but I think the reader has been patient enough. At my mention of the shoebox, a shudder will have run through the collectors amongst you, and they were right, of course. In one's teens, then as now, other attractions sweeter than sugar capture the interest eventually. The shoebox was forgotten for a year or two and when I finally came to re-open it the Carpet beetle and his bristly brood had done their worst; the Cabbage whites, the Tigers, the Puss moths and Poplar hawks had turned to dust. Fortunately, our memories are made of sterner stuff.

Spain revisited

by Graham Stevens (10417)

25 Pittville Crescent Lane, Cheltenham GL52 2RA.

We left our small village of Benifayo, situated 15 miles south of Valencia, Spain, in June 2001 after 13 years, to return to Cheltenham in Gloucestershire; so it was wonderful to receive a wedding invitation for the first week in March 2002, to take place in Benifayo.

We travelled by car and ferry to Northern Spain and managed to time our arrival perfectly to those of Las Tormentas (Storms). The heavy rains followed us all the way to Benifayo and stayed for the next two days. Eventually the sun did show its face and temperatures rose to a very nice 25°C. I took this opportunity to drive the three miles into the hills where we used to live. It took me a while to pluck up the courage to walk through the swarms of bees that were pollinating the orange blossom, to an area that I had studied for the previous 12 years. Immediately up on my arrival a female Swallowtail, (*Papilio machaon*) landed on a wild fennel plant, situated nearby and laid an egg before flying off. In the next half hour I counted around 30 specimens, unless it was the same female flying around in circles. The large majority of butterflies that I saw were Large whites (*Pieris brassicae*), probably over 75% being female and Southern wmall whites (*Artogeia mannii*). I counted eight Humming bird bawk moths (*Macroglossum stellatarum*), five Mallow skipper (*Carcharodus alceae*), one Common blue (*Polyommatus icarus*), one Brown argus, (*Aricia agestis*), and one Painted lady (*Vanessa cardui*). After two hours, I was about to leave when I caught sight of a Spanish festoon (*Zerynthia rumina*). This was the first time in 12 years of researching this area that I had seen this species here.

I had hoped to return the next day, but the storms returned and remained until we left four days later.

Plate 02P. Gwithian Towans, looking north from Upton Towans to Godrevy lighthouse.

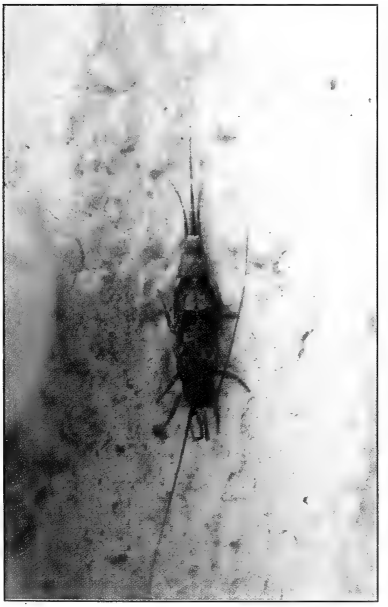

Plate 02Q. Coast bristle-tail. (*Petrobius maritimus*, sensu lato)

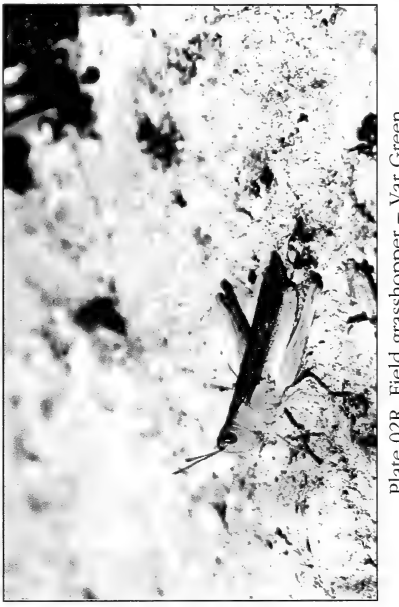

Plate 02R. Field grasshopper – Var Green (*Chorthippus brunneus*).

Plate 02S. Dune bee fly (*Villa modesta*).

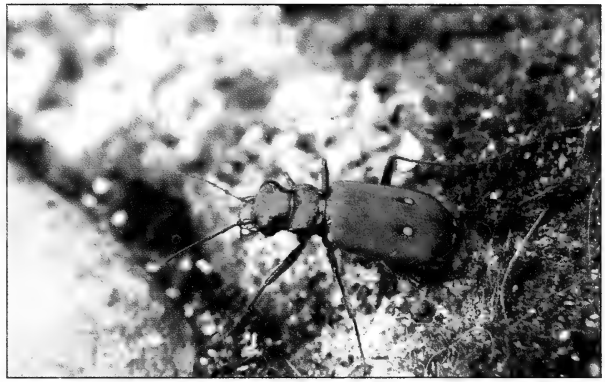

Plate 02T. Green tiger beetle (*Cicendela campestris*).

Plate 02U. Dune chafer (*Anomala dubia*)

Plate 02V. Leaf beetle (*Cryptocephalus aureolus*).

Plate 02W. Brown form of *Acanthoxyla geisovii* on *Corylopsis willmottiae* showing feeding damge.

Plate 02X. *A. geisovii* on *C. lawsoniana ellwoodii*

Plate 02Y. *A. geisovii* on *Salix lanata*.

(Haes, A Menu of Phasmid Fodder)

Plate 02Z. Lichen-patterned form of green variety of *A. geisovii* on the tree heath *Erica arborea altina* in July.

Plate 02AA. Lichen-patterned form of green variety of *A. geisovii* on the tree heath *Erica erigena* in July.

(Haes, A Menu of Phasmid Fodder)

Insects of the Hayle-Gwithian Towans

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"The Sands of Time, Hayle-Gwithians Towans" (*towan* is the Cornish word for dune) is a very well designed, informative pamphlet for use on the coastal dunes in the Hayle area of western Cornwall. It was produced in 1997 by the Planning Department of Cornwall County Council to cater for visitors over the millennium period. It summarises the richness of this area of calcareous coastal shell-sand dunes, both for its natural history and historically. It is available free from Hayle-Gwithian Countryside Service (tel. 01872 322642). Since its production, a large part of Upton Towans has been purchased by the County Council and is now managed by the Cornwall Wildlife Trust (CWT) working in partnership with the County Council who manage the neighbouring area of Gwithian Towans.

Since moving to Cornwall in September 1988, I have made frequent visits to this dune system for certain invertebrates and flowering plants. Although outside the scope of this article, I have to say, as a matter of general interest, that in the many years I have enjoyed studying wild orchids (mostly in Britain and France), that I have never seen such memorable displays of Pyramidal Orchids *Anacamptis pyramidalis* in June/July, nor of Autumn Lady's Tresses *Spiranthes spiralis* in August – early September, as were flowering here in 2001.

Unfortunately, I cannot say the same for sun-loving insects on these dunes. A main reason is that during the last few years the area has had very mild winters and the necessary spring and summer sunshine has been heavily diluted by driving rain or insidious sea fog rolling in. This in itself would not have had such a damaging effect, were it not for short but decisive cold spells, especially in April, so that early emergent species such as grasshoppers, aculeate Hymenoptera or early butterflies, induced by a warm winter to precocious development, were then mortally checked by cold snaps. Nevertheless, the summer of 2001 has, in my opinion, been the best for most sun-loving species on these dunes since the "good" summer of 1995. The exceptions have been grasshoppers, social wasps, and bees.

Despite these ups and downs, the dunes remain an excellent locality for invertebrates, and have been recognised as such since the nineteenth century.

Listed here are some of the more impressive looking, or ecologically significant, insect species likely to be seen close to the footpaths, including the South West Coast Path, on any reasonably sunny day during their seasons.

It is important to keep to the paths as far as possible, because the dunes are all too readily damaged by feet, wheels and hoofs. Great and lasting damage may also result from placing those little instant barbecue sets direct on species-rich turf. Collection of specimens should only be done with an appropriate permit from Cornwall Wildlife Trust, within the area designated as a nature reserve, and anyway should be restricted to species needing detailed examination.

THYSANURA (BRISTLE TAILS)

Machilidae

Coastal Bristle Tail *Petrobius maritimus* (sensu lato): Common nationally, but a key habitat indicator.

ODONATA (DAMSELFLIES AND DRAGONFLIES)

(See appendix for complete list)

Several widespread species hunt over the dunes, and, when mature, around six species breed on a small pond, as well as by the stream at Upton. Two recently dug, and naturally fed, ponds have attracted several species in their first year (2000).

Zygoptera (Damselflies)

Small Blue-Tailed Damselfly *Ischnura pumilio*: Nationally Notable (Nb) species. For some years a tiny population persisted on the clifftop pond on Gwithian Towans, but after three years of persistent on-shore winds it seems to have died out in 1996.

ORTHOPTERA (CRICKETS, GRASSHOPPERS AND GROUND-HOPPERS)

(See appendix for complete list)

Tettigoniidae (Bush-crickets)

Great Green Bush-cricket *Tettigonia viridissima*: A large population in taller vegetation on these dunes. A nationally local species.

Acrididae (Grasshoppers)

Field Grasshopper, var. "Green" *Chorthippus brunneus*: The species is common nationally, but the green variety is nationally rare, yet it is regularly present in small numbers on these dunes.

Mottled Grasshopper *Myrmeleotettix maculatus*: Nationally local, and a prime indicator of long standing turf with bare (basking) ground. Numerous on these dunes.

Tetrigidae (Ground-hoppers)

Cepero's Ground-hopper *Tetrix ceperoi*: Nationally Notable (Nb). Present in one damp locality on the dunes. It needs the eye of an expert to separate this species with certainty from the Slender Ground-hopper *T. subulata*, which is also present in damp places here. The Common Ground-hopper *T. undulata* also occurs.

DICTYOPTERA (COCKROACHES)

Blattelidae

Lesser Cockroach *Ectobius panzeri*: Nationally Notable (Nb). A substantial population of this tiny, unobtrusive cockroach is present.

DERMAPTERA (EARWIGS)

Forficulidae

Lesne's Earwig *Forficula lesnei*: A Nationally Notable (Nb) species, found in several places on the dunes. Most readily located by searching dry Hogweed *Heracleum sphondylium* stems in autumn. With practice, easily told from the ubiquitous Common Earwig *F. auricularia*.

HEMIPTERA – HETEROPTERA (SHIELDBUGS)

Several nationally common species, such as Sloe Bug *Dolycoris baccarum*, Blue Bug *Zicrona caerulea*, and Common Green Capsid *Lygocoris pabulinus*, and other grassland species are common on the dunes, which also support good populations of the following Nationally Scarce, or dune specialist, species.

Cynidae

Pied Shieldbug *Sehirus bicolour*: A distinctive, local, bug, found here mainly on Black Horehound *Ballota nigra*, as White Deadnettle *Lamium album* is scarce in the district.

Pentatomidae

Sciocorus cursitans: Nationally Notable (Nb). Here it is quite frequent on hot, dry, dune turf. Adults overwinter, but being small and sombre they need a special search. Far less colourful than most British Pentatomid bugs.

Coreidae (Squash Bugs)

By far the most numerous species is Dock Bug *Coreus marginatus*, but the remarkable looking species listed below is also present.

Syromastus rhombeus: The odd adults with broadened abdomens appear in spring in thin dry turf, where plants of the Caryophyllaceae are numerous, as along bank sided footpaths. The species is nationally local.

Rhopalidae

Corizus hyoscyami: A nationally local red and black free-flying bug, frequently over-wintering in coarse dune herbage. Adults are found in two generations, in spring and autumn.

Chorosoma schillingi: A nationally local, quite large, slim-line bug, found in taller areas of dune-grass. Adult in late summer. Distinctively slow moving for a shield bug.

Stenocephalidae

Spurge Bug *Dicranocephalus agilis*: Nationally Notable (Nb). A large, active, free-flying bug which colonises larger clumps of Sea Spurge *Euphorbia paralias* and Portland Spurge *Euphorbia portlandica*. Adults are found in late summer and again in spring after semi-hibernation, amongst litter in the vicinity of Spurge colonies.

Lygaeidae

Bugloss Bug *Graptopeltus lynceus*: Nationally Notable (Nb). An unobtrusive bug, overwintering as adults in grass tussocks on warm dry dunes. It feeds on Boraginaceae (Forget-me-nots *Myosotis* spp. and Viper's Bugloss *Echium vulgare*). Look for adults on Bugloss flower spikes in May-June.

Reduviidae

Heath Assassin Bug *Coranus subapterus*: A very active predator of other invertebrates. Like the Mottled Grasshopper, this species is a good indicator of continuity of habitat. Adults are found in the second half of summer, hunting by running over sand and short herbage.

Miriadae (Capsids)

Many common Capsids are present on these dunes. One small species merits special mention, although nationally widespread.

Rest Harrow Bug *Macrotylus paykulli*: By searching pathside Rest Harrow *Ononis repens* in the second half of summer, this attractive little (6mm) bug may be seen. This is an indicator of long, stable, open habitat.

HEMIPTERA – HOMOPTERA
(FROGHOPPERS AND LEAFHOPPERS, APHIDS etc.)

Froghoppers and Leafhoppers are collectively abundant on these dunes. Most need a specialist examination of voucher specimens to be identified to specific, if not to generic level, and are, in consequence, beyond the scope of these notes.

Aphrophoridae (Froghoppers)

The Common Froghopper *Philaenus spumarius* is abundant and readily seen as a froth-enclosed nymph. The small, active, adults are confusing because of their extensive colour variation. The much larger Alder Froghopper *Aphrophora alni* is conspicuous as an adult in early summer, and in no way linked to Alders *Alnus* spp. There are no other noteworthy froghoppers likely to be observed here by non-specialists.

Cicadellidae (Leafhoppers)

The same remarks apply. There is, however, one small species likely to be noticed, as it may occur in large numbers on bare sand in sunshine:

Psammotettix sabulicola: A habitat continuity indicator. Only 5mm long, and sandy coloured.

NEUROPTERA (LACEWINGS etc.)

Chrysopidae (Green Lacewings)

Only the nationally common Golden-eyed Lacewing *Chrysoperla carnea* (sensu lato) is frequent here, and bound to be noticed.

Hemerobiidae (Brown Lacewings)

These are small and unobtrusive. At least two species are present, but need detailed examination. Both are nocturnal, but may be flushed from herbage in daytime.

MECOPTERA (SCORPION FLIES)

Panorpidae

Panorpa communis is common and bound to be noticed. *P. germanica* has also been recorded recently. Both are nationally common.

LEPIDOPTERA – BUTTERFLIES

Some 25 species have been recorded on the dunes (see appendix for complete list). The following are noteworthy:

Lycaenidae (Blues, Coppers and Hairstreaks)

Brown Argus *Aricia agestis*: Nationally local. This double brooded species is seen in spring and high summer, and there are several small, but persistent, colonies.

Silver-studded Blue *Plebeius argus*: Nationally Notable. The large population on these dunes is also nationally noteworthy, being the grassland form with larvae on Birds Foot Trefoil *Lotus corniculatus*. Adults are seen in June through to early August.

Nymphalidae

Dark Green Fritillary *Argynnis aglaja*: A nationally local, and declining species. There is a small but persistent population, with adults ranging widely in July and August.

Small Pearl-bordered Fritillary *Boloria selene*: As Dark Green Fritillary. The small population is double brooded here, with a few adults to be seen in early and late summer.

Satyridae

Grayling *Hipparchia semele*: As Dark Green Fritillary, with the small population towards the coast. Like the Mottled Grasshopper, this is an important habitat indicator.

LEPIDOPTERA – MOTHS

General notes are made about each family conspicuously represented on this dune system, and easily seen by non-specialists. Species selected for particular mention are of special habitat or of national significance.

Yponomeutidae (Small Ermines)

Orchard Ermine *Yponomeuta padella*: In certain years the gregarious web-covered larvae swarm on Sloe *Prunus spinosa* and effectively defoliate the thickets with significant effects on the habitat.

Hepialidae (Swift Moths)

Only two, nationally common, species are frequent on these dunes.

Ghost Moth *Hepialus humuli*: Soon after midsummer, the pendulum flight of the males may be witnessed in sheltered hollows on the inland side of the dunes, at dusk, to attract the larger, inconspicuous females. The other species is Common Swift *H. lupulinus*.

Psychidae (Case Moths)

Psyche casta: The larvae may often be seen here. Their little straw cases look like tiny portions of soft cheeses "as packed" for the local markets in France. Most are seen on rocks or firm, short turf, feeding on lichens. The tiny black males need a special watch at dawn, or dusk, in high summer.

Zygaenidae (Burnets and Foresters)

One nationally widespread and one nationally declining species are recorded on the dunes. The commoner species is included (like the Field Grasshopper – see Orthoptera, Acrididae) in case a rare form is rediscovered here.

Five-spot Burnet *Zygaena trifolii* var. *decreta*: Nationally local and declining. This is a prime indicator for good wetland habitat, as at the CWT Loggans

Moor Nature Reserve, where there is a strong population. A tiny colony hung on by the cliff top pond on Gwithian Towans. Like the Small Blue-tailed Damselfly (See Odonata, Zygoptera), this species also seems to have gone from the site by the late 1990s.

Six-spot Burnet *Zygaena filipendulae*: This is only mentioned here as a speciality, in case anyone should see the distinctive yellow spotted form (f. *flava*), where the usual red spots are replaced by yellow. This used to be present at Gwithian, and at Navax Point opposite the lighthouse, but has not been seen for some 20 years. Please report any sightings to the CWT Environmental Records Centre (Tel. 01872 240777).

Pyralidae

Several species of "Grass Moths", such as *Agriphila tristella*, are readily flushed by walkers. The day-flying species mentioned below is a good habitat indicator, and the migrant Rush Veneer *Nomophila noctuella* can, in a year such as 1998, be exceedingly numerous.

Pyrausta cingulata: There is a conspicuous population here on most sun warmed dune slopes with carpets of Wild Thyme *Thymus polytrichus* (alias *T. drucei*).

Pterophoridae (Plume Moths)

Rest Harrow Plume Moth *Marasmarcha lunaedactyla*: This species, with the crescent moon mark on the forewings, may be flushed from pathside Rest Harrow in June and July.

Lasiocampidae (Eggars)

The large caterpillars of Oak Eggar *Lasiocampa quercus*, Drinker *Euthrix/Philudoria potatoria*, Fox Moth *Macrothylacia rubi*, and Lackey *Malacosoma neustria* are all readily to be seen on scrubbier parts of the dunes in season.

Geometridae (Geometers)

A Mercury Vapour light trap will reveal the nocturnal geometer populations here. Their looper caterpillars are rarely obvious, but according to the species are frequent on many dune plants. Two day flying species, Speckled Yellow *Pseudopanthera macularia* in early summer, and Yellow Shell *Camptogramma bilineata* around midsummer, occur in several places in the more sheltered hollows.

Sphingidae (Hawk-moths)

Of the six species found here, including Poplar Hawk-moth *Laothoe populi*, Eyed Hawk-moth *Smerinthus ocellata* and Elephant Hawk-moth

Deilephila elpenor, all regularly recorded, three species are worth particular mention:

Privet Hawk-moth *Sphinx ligustri*: The spectacular caterpillars are seen in small numbers on Wild Privet *Ligustrum vulgare* during late summer in some years.

Small Elephant Hawk-moth *Delephila porcellus*: The large hornless caterpillars feed particularly on Lady's Bedstraw *Galium verum*, and become conspicuous when they turn dark grey-brown, just before burying to pupate.

Humming-bird Hawk-moth *Macroglossum stellatarum*: A regular migrant (possibly overwintering as an adult here in Cornwall) to be seen laying on Lady's Bedstraw, where caterpillars may occasionally be found in late summer.

Arctiidae (Tigers, Ermines and Footmen)

These moths, conspicuous as hairy caterpillars or dusk flying adults, are a feature of the more inland parts of these dunes. Of the true tiger moths, only Wood Tiger *Parasemia plantaginis* and Jersey Tiger *Euplagia quadripunctata* are unrecorded, and the latter may appear before long. The moisture loving Scarlet Tiger *Callimorpha dominula* has been present since arriving in this district about 1992. Good persistent populations are found of the double-brooded Ruby Tiger *Phragmatobia fuliginosa*, of Cream-spot Tiger *Arctia villica*, flying in midsummer, and Garden Tiger *Arctia caja*, flying after midsummer. Likewise of the three nationally common ermines – White Ermine *Spilosoma lubricipeda*, Buff Ermine *Spilosoma lutea* and Muslin Moth *Diaphora mendica*. The Cinnabar *Tyria jacobaeae* is very obvious, with its showy day flying adults, and Ragwort feeding caterpillars, in Cornish rugby colours, which are found in large numbers in most years. The nocturnal footmen moths, with lichen feeding larvae, are also numerous, but easily overlooked.

Noctuidae

Many species have been recorded on the dunes. The most likely species to be seen in daytime is the largely migrant Silver-Y *Autographa gamma*. There is a small population of the day flying Mother Shipton *Callistege mi*, and the conspicuous caterpillars of Mullein Shark *Cucullia verbasci* may often be seen feeding on Mullein plants, including the Nationally Scarce Twiggy Mullein *Verbascum virgatum*. A Mercury Vapour light trap will reveal the considerable variety of noctuids on these dunes.

DIPTERA (TRUE FLIES)

A large and complex population is present, but has not been studied in detail recently. A few habitat indicators are listed for special mention. Most are day flying and, more or less, obvious to a non-specialist.

Tipulidae (Crane-flies)

Some virtually ubiquitous kinds like *Tipula oleracea* and *Tipula paludosa* are frequent in turfy areas. The easily observed speciality of the dunes is listed.

Dune Crane-fly *Nephrotoma submaculata*: A dry dune turf indicator. Adults are seen from spring to about midsummer, and can be numerous along the paths.

Bibionidae (St. Mark's Flies)

Collectively, this family is very numerous from spring until autumn. One of the earliest and most obvious is St Mark's Fly *Bibio marci*, which is conspicuous along the paths.

Syrphidae (Hover-flies)

Collectively numerous, but most need the eye of a dipterist to be certain of identification. A well studied family, thanks to the popular handbook by A. E. Stubbs and S. J. Falk, first published in 1983.

Asilidae (Robberflies)

Four species have been recorded, one of which is a numerous and conspicuous predator along the paths and in more open vegetation, from early to late summer.

Fan-bristled Robberfly *Dysmachus trigonus*: Nationally, this is a mostly coastal species. Here it is a major predator, mainly of other flies. The male presents the female with a gift of such prey before mating. This may, with patience, be witnessed quite easily.

Bombyliidae (Bee-flies)

The nationally widespread and familiar spring flying Dark-edged Bee-fly *Bombylius major* seems scarce in this locality, but two members of the family are worth noting.

Dune Villa *Villa modesta*: Nationally Scarce (Nb) and local. This large summer flying species has a strong population on the seaward side of the dunes. It has a remarkable life cycle and laying behaviour, parasitising large caterpillars.

Flea Bee-fly *Phthiria pulicaria*: A Nationally Scarce species (Nb). By far the smallest species (only c5mm long), when seen in close up suggests a miniature, almost hairless, *Bombylius major*. Numerous along paths and in bare hollows from about midsummer. Its host is unknown as yet, probably caterpillars of a micro-moth.

Therevidae (Stiletto-flies)

Most are obscure, specialist, predatory flies, but one dune species is likely to be noticed because of its amazingly coloured powder blue male.

Acrosathe (alias *Thereva) annulata*: Locally numerous in warm dry hollows and along paths in summer. The brown females are inconspicuous and easily overlooked, except when pairing. The species predates smaller insects.

Conopidae

An interesting family, which has a complicated life style. For most species, one must be at the right time, in the right place to see the strange looking, short lived adults. Two nationally widespread kinds are sufficiently numerous to produce a succession of adults, to be noticed as a matter of course, from about mid to late summer.

Sicus ferrugineus: Attaches it eggs, in flight, to Bumble Bees. This species is dark brown with a pale "face". Often to be seen when *in cop.*

Physocephala rufipes: Another Bumble Bee parasite. (The "Collins Guide" illustrates a much rarer – and larger – relative.)

Tachinidae

Several species are present, but need careful identification. The largest species is likely to be noticed because of its size – that of a large queen Bumble Bee.

Tachina grossa: Present in small numbers for most of summer. A black species with a pale head, often seen nectaring on flowers. Its grubs develop inside larger caterpillars.

Calliphoridae (Blow-flies)

Bluebottles (*Calliphora* spp.), Greenbottles (*Lucilia* spp.) and the black, grey mottled Flesh Flies (*Sarcophaga* spp.) are collectively very numerous on the dunes, but need the skills of a specialist to identify down to species level. They all provide an essential service in preventing the accumulation of dung or bodies.

Muscidae

The same remarks apply to these "house" flies, which are collectively abundant. Because of its strongly pigmented wing bases, the common *Mesembrina meridiana* can readily be identified by the non-specialist. Frequent here, nectaring on Hogweed *Heracleum sphondylium* and other umbellifers (now Apiaceae).

Scathophagidae

The family Yellow Dung-flies (*Scathophaga* spp.) and the related genera are, again, not possible to identify to specific level without detailed examination. The Yellow Dung-flies on the dunes may be conveniently noted as *Scathophagus stercoraria* sensu lato.

HYMENOPTERA (SAWFLIES, ANTS, WASPS, BEES AND ICHNEUMONS)

This large order is very well represented on the dune complex. Most are difficult to identify to species level, and even Bumble Bees need a trained hymenopterist to be certain of correct identification. The sub-order Symphyta (Sawflies) and the various "Gall Wasps" and parasitic Ichneumons are not included further here, as only a few larger and more conspicuous species can be identified "in the field". Many kinds will be seen by the non-specialist, some big and spectacular, but it would be unduly space consuming to comment on them in these notes.

Aculeate Hymenoptera

Chrysidae (Ruby-tailed Wasps)

Small, but brilliantly coloured, this family parasitises various solitary bees and wasps. For field notes, the green/blue and red ones are most easily listed collectively as *Chrysis ignita* sensu lato – especially as this group is being comprehensively renamed.

Formicidae (Ants)

The dunes have one species of outstanding ecological importance. The other kinds present, mostly common enough in gardens or other mixed habitats, are noticeably restricted in distribution here. Since 1990 seven ant species have been recorded, but even the Black Garden Ant *Lasius niger* and Yellow Meadow Ant *Lasius flavus*, with many older nest mounds shaded out by overgrowth, are restricted to "earthy" hollows and path sides. Wood Ant relatives are confined to marginal, mainly rocky sites, where *Formica fusca* and *Formica cunicularia* (the one which visits flower heads in noticeable numbers), occur only locally. One site for the tiny, and always very busy, *Tetramorium caespitum* is currently known, and the two commonest Red Ant species *Myrmica scabrinodis* in short turf, and *Myrmica ruginodis* in taller vegetation, have patchy distributions. The following, however, is a key species amongst invertebrates on the dunes, and is something of a population phenomenon.

Lasius alienius: Huge, linked, nest complexes cover parts of the more thinly vegetated areas, where the ground is firm. Honey-dew from subterranean aphids is apparently a major source of food. These small ants groom and protect the caterpillars of Small Copper, Brown Argus, Silver-studded and Common Blues, in return for their sugary secretions. The large Silver-studded Blue population would probably be far less substantial, if reliant on the other ant species here.

Pompiliidae (Spider-hunting Wasps)

Six species have been recorded, including a "cuckoo" parasite (*Evagates crassicornis*) of fellow pompilids. Two nationally widespread examples are likely to be noticed, because of their numbers.

Pompilus cinereus: Seemingly tireless, searching bare sand and adjacent vegetation for Wolf Spiders (*Lycosidae*) and Crab Spiders (*Thomisidae*).

Episyron rufipes: A relatively large pompilid, seen in taller vegetation, which makes short searching flights for orb-web spiders. These it snatches from their webs to carry back, paralysed, to its burrows in more open sites, as along the margins of paths.

Sphecidae (Digger Wasps)

About 12 species have been recorded here. Several are distinctive and flaunt themselves in sunshine, and thus are readily noticed, either nectaring or (the females) hunting prey.

Ammophila sabulosa: A good population of this indicator of habitat continuity. Females may be seen dragging a large, paralysed, caterpillar to their burrows.

Podalonia hirsuta: A Nationally Notable (Nb) species. Less dumb-bell shaped than the last, but otherwise rather similar in size and behaviour. Present in small numbers until 1995, but not seen since.

Crabro cribarius: A black and yellow species, about the size of a worker wasp. Males are often seen nectaring at Wild Carrot *Daucus carota* or Hogweed, where their remarkable, broadened, front legs, used to aid pairing, can be seen. The normal shaped females hunt and parasitise Blow-flies or similar prey.

Mellinus arvensis: Another wasp coloured species, present in good numbers here. Females make Hover-flies their prime target.

Cerceris arenaria: Although solitary, they nest gregariously. They specialise in hunting Weevils. There are several colonies on this dune system, some near paths. The abdomen of this worker-wasp sized insect is grooved at each segment, suggesting a slim "Michelin Man".

Tachysphex pompiliformis: A smaller red and black species which may be seen in high summer. They prey on nymphs, and even adults, of grasshoppers, to drag them, paralysed, back to their burrows. These may be raided by a small Ruby-tail Wasp *Hedychridium ardens* which lays its own eggs on the grasshopper. These eggs are quicker developing, so the Ruby-tail grub beats and deprives the hosts' grub of its succulent life support.

Eumenidae (Mason Wasps)

At least four species are present, but they need a specialist's eye for identification. However, the little curved nest tubes of *Odynerus spinipes* may be seen on well packed ground or wall tops around midsummer. Nests are stocked with small paralysed weevil larvae.

Vespidae (Social Wasps)

Five species are recorded. They are Common Wasp *Vespula vulgaris*; German Wasp *Vespula germanica*; and less numerously, Red Wasp *Vespula rufa*; Tree Wasp *Dolicovespula sylvestris*, and the very big newcomer *Dolicovespula media*, which like the others is not a danger to humans unless its nest is disturbed. Like the Tree Wasp, it nests in dense thickets rather than in the ground.

Colletidae

This is an interesting family of solitary bees with short wide tongues. They need to be identified by a hymenopterist. Three species are recorded, of which the following is a dune specialist.

Colletes marginatus: A Nationally Notable species (Nb). There is a substantial population of this scarce, high summer, bee, as well as the commoner *Colletes fodiens*.

Andrenidae

A major family of solitary bees, of which about 15 species are recorded here, most being good habitat indicators. Several are Nationally Notable, and one is Nationally Rare (see below).

Andrena hattorfiana: A Nationally Rare bee (RDB3). There is a small population dependent upon Field Scabious *Knautia arvensis* for pollen. The colony of this large dark bee has been subject of a special survey since 1991, latterly with conservation measures taken.

Andrena marginata: A Nationally Notable (Na) species. A small population, dependent on Field Scabious like the above.

Andrena pilipes: Another Nationally Notable (Nb) species. There are several strong colonies of this impressive dark-winged bee in the area, and its population seems to be increasing. It is double brooded, with adults in spring and summer.

Andrena thoracica: The most numerous of these Honey Bee sized solitary bees. This too is double brooded. It has orange hairs on the thorax, and a shiny black abdomen.

Andrena flavipes: An important habitat indicator of relatively undisturbed coastal habitats. Again, double brooded. There is a strong population in rocky ground on the coastal margin of the dunes.

Andrena humilis: Nationally Notable (Nb). Another coastal species, with very few known Cornish sites: one being at the old Gunpowder Works.

Halictidae

Generally smaller and less obtrusive to the non-specialist observer than the last family, but most "tiny" bees in yellow composite flowers, from early

spring to autumn will be examples. The relatively large (8-10mm) *Lasioglossum calceatum* is noticeably common, and like most of the others has spring and summer broods. Summer mated females overwinter to appear in spring, as do *Andrena* species, and the genus *Sphecodes*, which comprise small "cuckoo" bees. Three species have been recorded, the largest, *Sphecodes monilicornis*, is noticeable to the non-specialist, nectaring on flowers.

Megachilidae (Leaf-cutter Bees and relatives)

A fascinating family of solitary bees, which carry pollen on the underside of the abdomen. Leaf-cutters make nests with neatly cut Rose, or other leaves. *Anthidium manicatum*, also present here, uses the leaf hairs of Mulleins and other plants, instead of cut leaves; whilst an *Osmia* species, of ecological significance on the dunes, uses empty snail shells.

Megachile maritima: The largest leaf-cutter of the four species recorded here. A coastal species, with a good population; where its related "cuckoo" is *Coelioxys conoidea*, whose black and grey females have sharply pointed abdomens.

Megachile leachella: Nationally Scarce (Nb). During the last ten years a large population of this small, colonially nesting, leaf-cutter has developed on the dunes. Males have green eyes, and make a distinctive whining buzz in flight. Females often use Wild Clematis *Clematis vitalba* leaf segments to line their nest cells.

Osmia aurulenta: A good indicator of continuity of habitat. It nests in suitably sized snail shells; here mainly the Brown-lipped Snail *Helix nemoralis* and the Garden Snail *Helix aspersa*.

Anthophoridae (Flower Bees)

The Flower Bees include the *Nomada* spp., a genus of hairless cuckoo bees, which look like small wasps. Some are host specific, but the several commoner species parasitise any nest of *Andrena* spp. to hand. Two such are *Nomada marshamella* and *Nomada flava*, which are widespread on this dune system. They probably attack nests of such widespread hosts as spring and summer broods of *Andrena bicolor*, *A. cineraria*, *A. scotica*, *A. armata*, *A. thoracica*, and *A. haemorrhoa*; all of which are frequent along paths and firmer ground. Two other flower bees, widespread here, are large, early spring flying, *Anthophora plumipes*, and the summer flying *Anthophora bimaculata*, with its distinctive yellow "face". A less conspicuous member of the family here is *Epeolus cruciger*, a cuckoo parasite of *Colletes* spp, probably *Colletes marginatus* (see above).

Apidae (Social Bees)

Honey Bee *Apis mellifera*: Normally numerous, but cultured stocks have been depleted by brood mites in 2000-2001, resulting in a noticeable reduction in numbers.

Bumble Bees (*Bombus* spp) Ten species have been recorded, three being of particular interest. Even numbers of the hard core seven still widespread species, *Bombus hortorum, B. lapidarius, B. lucorum, B. pascuorum, B. pratorum, B. terrestris*, as well as the cuckoo parasite of *B. pascuorum B.* (alias *Psithyrus*) *campestris*, were low in 2001. Their mated queens, induced into precocious emergence by a mild winter were knocked by an unduly cold wet spring. Three now nationally declining species were also recorded in very small numbers.

Bombus humilis: Present in the Gunpowder Works area.

Bombus jonellus: Present along the coastal area.

Bombus (alias *Psithyrus*) *rupestris*: Present generally. This is a cuckoo parasite of *B. lapidarius*, which it resembles in colour, except its females have dark wings.

COLEOPTERA (BEETLES)

As in other habitats, beetles are a dominant insect order on these dunes. They include nationally scarce or important habitat indicators listed below, most of which may be seen by a non-specialist. However, most will need identification by a coleopterist, and many are nocturnal, although the Glow-worm *Lampyris noctiluca* cannot be missed as darkness falls in mid to late summer.

Carabidae (Tiger Beetles and Ground Beetles)

Many, mainly nocturnal species have been recorded, including the large *Carabus problematicus*. Numerous examples of the sun loving genera *Amara* spp. and *Notiophilus* spp. may be seen dashing about on and by the paths.

Green Tiger Beetle *Cicindela campestris*: A small but widespread population on firm ground in dry situations.

Elaphrus riparius: Like a small pitted tiger beetle. Found on damp ground at Upton Towans, with the Ground-hoppers (see Orthoptera, Tetrigidae).

Dytiscidae (Diving Beetles) and Gyrinidae (Whirligigs)

Several species have been recorded from the few wet sites, including the two new pools on Upton. Examples are Great Diving Beetle *Dytiscus marginalis*; *Agabus nebulosus* and *Hygrotus inaequalis*. They fly readily in summer, and may then land on shiny parked cars, mistaking them for desirable ponds. At least two species of Whirligigs *Gyrinus* spp. are very obvious circling on the ponds.

Silphidae (Carrion Beetles)

Several species have been recorded, including black and red *Nicrophorus* spp. and snail hunting *Silpha* spp.

Staphylinidae (Rove Beetles)

Many species present, practically all needing specialists' attention. They include the large black Devil's Coach-horse *Ocypus olens*, and large black and red *Staphylinus dimidiaticornis*, but certainly not the excessively rare (RDB2) *S. caesareus*, although this is the one illustrated in most general books on British insects.

Geotrupidae (Dung Beetles)

The large Dor Beetle *Geotrupes stercorarius* is frequently encountered in flight, and there is one small area on Phillack Towans where a colony of Minotaur Beetle *Typhaeus typhoeus*, which is largely dependent on rabbit droppings, has been found.

Scarabidae

The several small *Aphodius* spp. need specialists' attention. The familiar Cockchafer *Melolontha melolontha* often over-flies the landward dunes in summer. Four scarabs are of particular interest here

Serica brunnea: An all brown beetle, often to be seen on paths and in dry hollows from mid to late summer.

Summer Chafer *Amphimallon solstitalis*: There is one localised population near the cliff edge. It looks like a bristly, dusk flying, Cockchafer.

Dune Chafer *Anomala dubia*: Nationally Notable (Nb). It is widespread here in very sandy places at the edge of marram clumps. This is a dune speciality, flying at midsummer.

Rose Chafer *Cetonia aurata*: Mainly seen at Hawthorn and other blossom, when the overwintered adults fly freely.

Elateridae (Click-beetles)

Several common grassland species are frequent, and there is one relatively large dune speciality here.

Mottled Click-beetle *Agrypnus murinus*: A greyish mottled species, which is very active by paths and patches of scrub throughout summer, and is readily seen.

Cantharidae (Soldier and Sailor Beetles)

Soft bodied predators, in bright colours. Bound to be noticed nectaring in summer, none more so than the Soldier Beetle *Rhagonycha fulva*, often to be seen copulating on flowers in high summer. Four species are recorded.

Lampyridae (Glow-worms)

Glow-worm *Lampyris noctiluca*: There is a large population on the dunes because of the large snail population which provides food for the larvae in

their two year development. From mid to late summer the big larvaeform females produce their fascinating greenish lights to attract the free-flying males. Since 1996, the CWT and the County Council have provided specially organised Glow-worm nights. These prove especially popular with children, and not only for the Glow-worms, but other nightlife insects such as the loudly stridulating Great Green Bush-crickets.

Tenebrionidae (Church-yard Beetles) and Lagriidae

Phylan gibbus: A dune specialist, sombre but noticeable in short vegetation in spring and early summer.

Cteniopus sulphureus: A free-flying yellow beetle often to be seen on flower heads with the Soldier Beetle. An important indicator of the warm micro-climate of the dune turf.

Lagria hirta: A close relative of the above. A brown hairy beetle, widespread under debris and fallen leaves.

Oedemeridae

Pop-Eye Beetle *Oedemera nobilis*: Another frequent flower beetle during summer. The burnished green males are very obvious because of their enlarged "Pop-Eye" style hind legs.

Coccinellidae (Ladybirds)

Five larger species are normally common and noticeable in and around the dune herbage; Seven-spot Ladybird *Coccinella 7-punctata*, Eleven-spot ladybird *C. 11-punctata*, Ten-spot Ladybird *Adalia 10-punctata*, Twenty Four-spot Ladybird *Subcoccinella 24-punctata*, and the Fourteen-spot Ladybird *Propylea 14-punctata*. The amazing looking Kidney-spot Ladybird *Chilocorus renipustulatus* is frequent on Sallow *Salix atrocinerea* feeding on scale insects there. All ladybird populations were in marked decline in 2000 and 2001, partly because of the sharp cold spells in April of both years. This checked a build up of aphids, the main food of the overwintering adults. A recorded huge build up of the tiny (4mm) Brachynid Wasp *Dinocampus coccinellae*, a major parasite of Seven-spot Ladybirds, has coincided with this setback.

Chrysomelidae (Leaf Beetles)

Many species, including the 6mm red and blue *Oulema melanopus*, abound on the dune vegetation. The family includes various leaping Flea-beetles, which are usually host specific. Five conspicuous or Nationally Scarce Leaf beetles are selected for special mention.

Chrysolina haemoptera A Nationally Scarce (Nb) beetle. This small (10mm) shiny black species is usually found on Bucks Horn Plantain *Plantago*

coronopus by paths and dune slopes. Found in late summer and in spring after hibernation as an adult. A strong population of this indicator of undisturbed, open, habitat is present on these dunes.

Chrysolina banksii: A conspicuous large (15mm plus) bronze-green beetle, now scarce in much of its range. It is still common in Cornwall, where it must have additional host plants to Black Horehound *Ballota nigra*. Adults are found from late summer to the following spring, and are often active in mild weather over the winter.

Cryptocephalus aureolus: Another Nationally Scarce (Nb) species. A small (10mm) brilliant green beetle, frequent here on Bulbous Buttercup *Ranunculus bulbosus* and other flowers in spring and early summer. The similar *C. fulvus* is also recorded here. The genus needs a coleopterist to be certain of specific identification.

Cassida murraea: A highly distinctive Tortoise Beetle, locally present in damp places on Fleabane *Pulicaria dysenterica*, as by the stream on Upton Towans, and the pond on Phillack Towans. The all green *Cassida viridis* is also found by the stream. The similar *Cassida rubiginosa*, in drier habitat, is widespread across the dunes.

Bloody-nosed Beetle *Timarcha tenebricosa*: A large and familiar beetle, with a large population here, overwintering as an adult. Its curious larvae (like Mk4 WW1 tanks) feed conspicuously on bedstraws and Goosegrass (*Galium* spp.).

Apionidae and Curculionidae (Weevils)

Many smaller kinds abound on these dunes; Pea Weevil *Sitonia lineatus* probably the most numerous, although the tiny (4mm) Gorse Weevil *Apion ulicis* possibly comes close with its adults being abundant on Gorse *Ulex europaeus* flower heads in spring. One habitat indicator of the Marram zone calls for particular mention.

Otiorhyncus atroapterus: A relatively large (c12mm) all black weevil, often numerous on bare sand in and around Marram clumps, even to the fore dunes. Adults are found through most of the summer and are easily seen. This species is an important dry dune indicator.

Acknowledgements

Spalding Associates (Environmental) Ltd (Adrian Spalding, Catriona Neil and Chris Haes undertaking the surveys) for detailed surveys between 1996 and 1999 resulting in the majority of important invertebrate records listed here, and Adrian Spalding for the establishment of the butterfly transect during this period.

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Alan E. Stubbs, Consultant Entomologist of English Nature and senior author of the standard Hover-fly reference book, for identifying many specimens of Diptera from the site between 1992 and 1998.

References

Alexander, K. N. A. In prep. *A Provisional Atlas of the Hemiptera – Heteroptera of Cornwall*, Cornwall & Isles of Scilly Federation of Biological Recorders and Environmental Records Centre for Cornwall and Isles of Scilly, Truro.

Asher, J. et al. 2001. *The Millennium Atlas of Butterflies in Britain and Ireland*, Oxford University Press.

Chinery, M. 1986. *Collins Guide to the Insects of Britain and Western Europe*, Collins, London.

French, C. N., Murphy, R. J. and Atkinson, M. C. G. 1999. *Flora of Cornwall*, Wheal Seton Press, Camborne

Haes, E. C. M. 1999. *Orthopteroid Insects of Cornwall and the Isles of Scilly. A Revised Provisional Atlas*, Cornwall & Isles of Scilly Federation of Biological Recorders Occasional Publication No. 1, Wheal Seton Press, Camborne

Hammond, C. O. 1977. *The Dragonflies of Great Britain and Ireland*, Curwen Books, London

Neil, C. J. 1996. *Habitat and Vascular Plant Survey of Gwithian Towans*, Cornish Biological Records Unit, Pool, Redruth.

Smith, F. H. N. 1997. The Moths and Butterflies of Cornwall and the Isles of Scilly, Gem Publishing Co., Wallingford.

Spalding Associates (Environmental) Ltd. 1998. *Survey of Invertebrates of Phillack Towans*, Spalding Associates (Environmental) Ltd, Truro.

Spalding Associates (Environmental) Ltd. 1998. *Survey of Invertebrates of Upton Towans*, Spalding Associates (Environmental) Ltd, Truro.

Stubbs, A. E. and Drake, M. 2001. *British Soldierflies and their allies* British Entomological and Natural History Society, London.

Stubbs, A. E. and Falk, S. J. 1983. *British Hoverflies* and its two supplements in 1986 and 1993, British Entomological and Natural History Society, London.

Appendices

For ease of reference, these are the complete lists of Dragonflies and Damselflies (Odonata), Grasshoppers and relatives (Orthoptera), and Butterflies (Lepidoptera).

1 ODONATA (Damselflies and Dragonflies)

Sub-order – ZYGOPTERA (Damselflies)

Coenagriidae

Large Red Damselfly *Pyrrhosoma nymphula*; Azure Damselfly *Coenagrion puella*; Common Blue Damselfly *Enellagma cyathigerum*; Scarce Blue-tailed Damselfly *Ischnura pumilio*; Blue-tailed Damselfly *Ischnura elegans*

Lestidae

Emerald Damselfly *Lestes sponsa*

Agriidae

Beautiful Demoiselle *Calopteryx virgo*

Sub-order – ANISOPTERA (Dragonflies)

Aeshnidae

Migrant Hawker *Aeshna mixta* (Not yet resident here); Southern Hawker *Aeshna cyanea*; Emperor Dragonfly *Anax imperator*

Cordulegasteridae

Golden-ringed Dragonfly *Cordulegaster boltonii*

Libellulidae

Four-spotted Chaser *Libellula quadrimaculata* (Not resident.); Broad-bodied Chaser *Libellula depressa*; Common Darter *Sympetrum striolatum*

2 ORTHOPTERA (Grasshoppers and relatives)

Tettigoniidae (Bush Crickets)

Great Green Bush-cricket *Tettigonia viridissima*; Dark Bush-cricket *Pholidoptera griseoaptera*; Speckled Bush-cricket *Leptophyes punctatissima*

Tetrigidae (Ground-hoppers)

Cepero's Ground-hopper *Tetrix ceperoi*; Slender Ground-hopper *Tetrix subulata*; Common Ground-hopper *Tetrix undulata*

Acrididae (Grasshoppers)

Field Grasshopper *Chorthippus brunneus*; Meadow Grasshopper *Chorthippus parallelus*; Mottled Grasshopper *Myrmelleotettix maculatus*

3. LEPIDOPTERA (Butterflies)

Hesperiidae (Skippers)

Large Skipper *Ochlodes venata*; Small Skipper *Thymelicus sylvestris*

Pieridae (Whites & Yellows)

Clouded Yellow *Colias croceus* (Migrant and possibly short term resident.); Large White *Pieris brassicae*; Small White *Pieris rapae*; Green-veined White *Pieris napi*; Orange Tip *Anthocharis cardamines*

Lycaenidae (Blues, Coppers & Hairstreaks)

Green Hairstreak *Callophrys rubi* ? (Seen in 1990, but breeding never confirmed.); Small Copper *Lycaena phlaeas*; Silver-studded Blue *Plebejus argus* (Grassland form only.); Brown Argus *Aricia agestis*; Common Blue *Polyommatus icarus*; Holly Blue *Celastrina argiolus*

Nymphalidae

Red Admiral *Vanessa atalanta*; Painted Lady *Vanessa cardui* (Migrant and short term resident.); Small Tortoiseshell *Aglais urticae*; Peacock *Inachis io*; Comma *Polygonia c-album*; Small Pearl-bordered Fritillary *Boloria selene*; Dark Green Fritillary *Argynnis aglaja*

Satyridae

Speckled Wood *Pararge aegeria*; Wall Brown *Lasiommata megera*; Grayling *Hipparchia semele*; Gatekeeper *Pyronia tithonus*; Meadow Brown *Maniola jurtina*; Ringlet *Aphantopus hyperantus*; Small Heath *Coenonympha pamphilus*

Acknowledgements: I must thank members of Butterfly Conservation and Gwithian Residents' Association Dune Monitoring Scheme for the key data for this list of butterflies.

Book Review

De danske græshopper

Ole Fogh Nielsen. 192 pp, 2000, DKK 300.00 (excluding postage). Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark. ISBN 87-88757-50-1 (in Danish).

This book is a thorough and well-presented guide to the Orthoptera of Denmark, dealing with the grasshoppers and crickets only. There are no details of other orthopterids. It is well illustrated throughout with excellent photographs and good, clear diagrams, and has an accompanying CD of their songs. In the introduction, the author states that he has written the book with a range of readers in mind. To give an overview of the group to the casual observer, hoping to promote interest in, and the study of, the Orthoptera. As well he hopes it will be an authoritative guide to specialist amateurs and professionals in the field.

The book has 11 "chapters" (or sections). The first deals with the origins, fossil history and classification. Chapter two gives an overview of the life cycle, whilst the third gives brief general details about habitats and the fourth has an overview of predators, parasites etc. The fifth covers the songs, initially describing how the songs are produced and the frequency ranges employed. There follows a discussion of the different types of songs produced (*kaldesang* – the calling produced by the male to attract a female, *rivalsang* – the males produce this to compete against rivals for females and to advertise territory, *friersang* – the courtship song). Chapter six covers the methods used to study the Orthoptera, in particular the song. He gives advice on how to record them, and use an ultrasonic detector to hear the details beyond the human hearing range. He describes the sonographs that may be obtained, with examples. This is followed by advice on their photography.

Chapter seven is the systematic section, containing the detailed accounts of each of the 32 species found in Denmark and therefore forms the bulk of the book. This section also includes details of species that have been found there, but have not been proven to breed. At the

beginning there is a brief description of the distribution maps, there being one in each species account. The main sources of records are those prior to 1969 that were taken from an earlier work *(The distribution of Orthoptera in Denmark, Scania and Schleswig-Holstein,* 1969, by Knud Th. Holst) whilst records for the period 1992-1999 are those of the author. The maps do not separate these different sources. The dark blue areas on the map indicate the breeding range, the yellow shows areas where the species is not found. A cross shows single sightings. Where the species is found throughout Denmark, no map is given. Each species account follows a general format. It starts with a general introduction to the species, followed by a description of the adult, with a colour photograph of the male and of the female. On occasions there are diagrams of key features and photographs of colour forms. There is advice on how to recognise the species from those with which it may be confused. This is followed by details of the habitat, again with a colour photograph, development, life cycle and food, (sometimes with a photograph of feeding marks) and distribution, with a map where appropriate. Specialised collecting methods, such as for nymphs, are described where appropriate. The individual species account is rounded off with a description of the song, with a sonograph of the song over ten seconds (occasionally over 20 seconds) and a detail of part of the song over a fraction of a second.

Chapter eight is a systematic list of the Danish species and follows the earlier work of Holst (1986). The Danish names are those from an earlier work by the author (1996). Chapter nine deals with identification, with a description of important general features and a dichotomous key. Diagrams of critical differences are interspersed throughout the key. Chapter ten deals with the CD, including the details for each track – who made the recording (though most are those of the author), whether it was a captive specimen (F), or a wild one (N), the locality, date, time of day, temperature and weather at the time. Tracks 39-48 were made using the ultrasound detector described earlier and track 49 has been electronically synthesised as it represents the song of a fossil species about 54 million years old. Chapter eleven has the ***kaldesang*** for each species for comparative purposes. There follows a list of references and an index.

This book will be essential for anyone needing information on, or a field guide to, the Danish Orthoptera. It is perhaps less scientific in its approach than the book on British and Irish Orthoptera by Haes and Marshall, but to a large extent it fulfils the aims set out in the Introduction.

Nick Holford and Berit Pedersen

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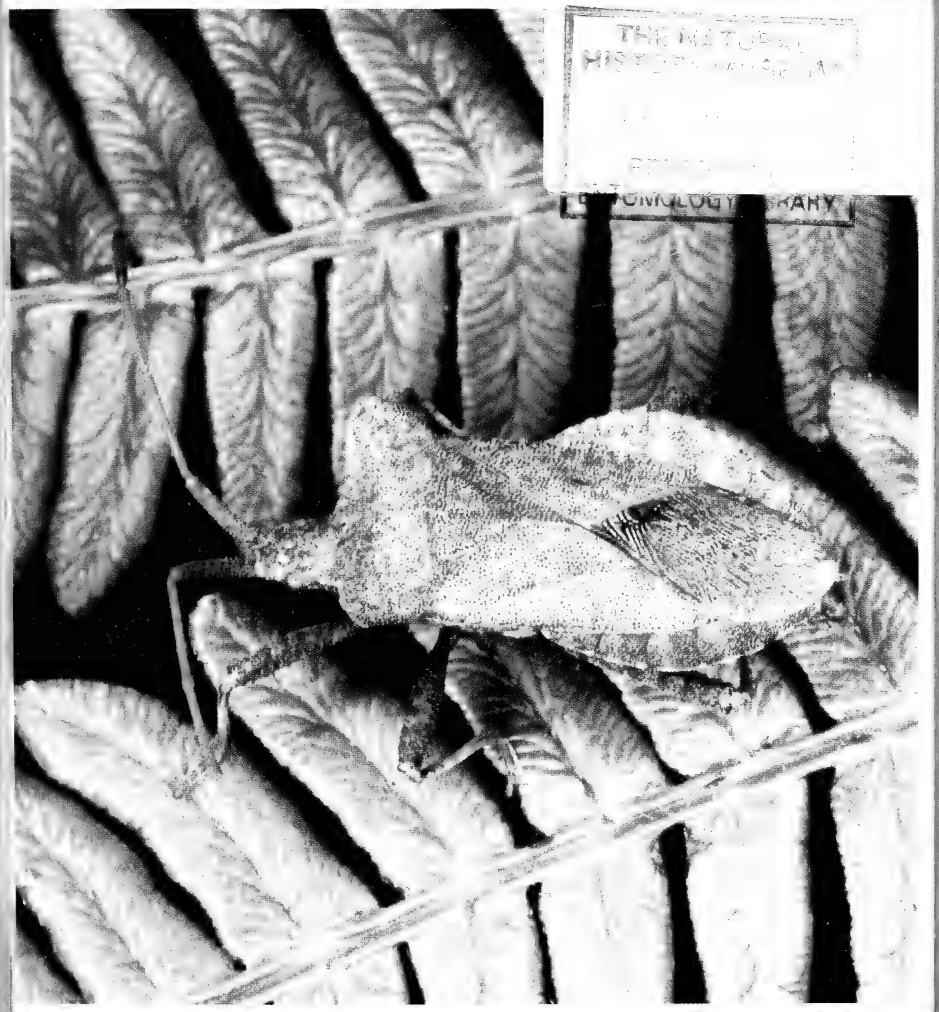

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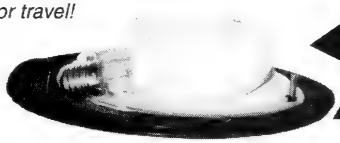

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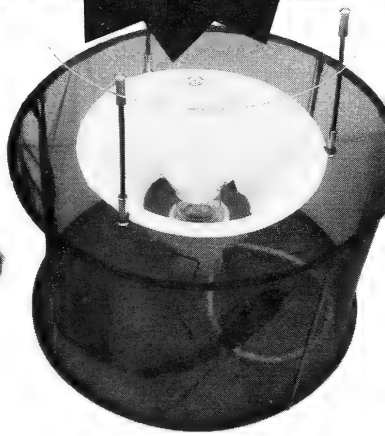

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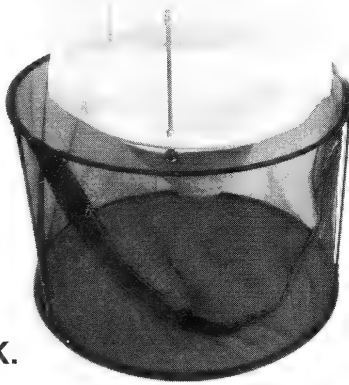

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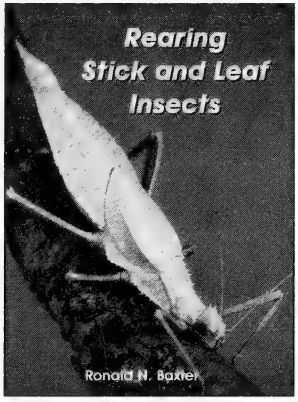

Rearing Stick and Leaf Insects

by Ronald N. Baxter

Part One commences with an overview of eggs in general together with detailed methods by which they are laid and how to care for them prior to hatching
Rearing. This section deals with the various cages which will be required and which can be easily made. Guidance is given on caring for small nymphs, large nymphs and finally, adults.

Part Two. Here there are 50 species described in detail, with information on distribution, descriptions of both male and female, egg and egg laying, list of foodplants which are acceptable in captivity together with general rearing requirements. Species which are especially suitable for children are mentioned.

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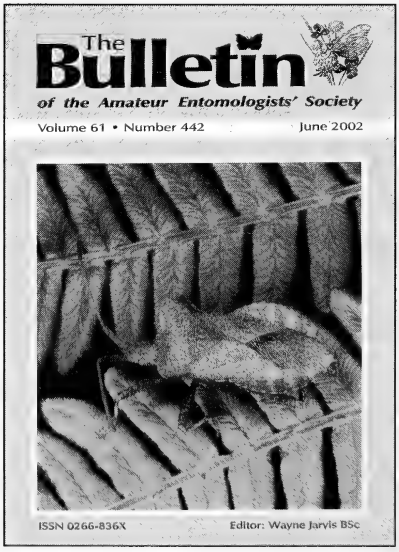

Photo: Nick Holford.

The cover of the *Bulletin* features the *Coreus marginatus,* Brown squash bug. Most of the members of the Hemipteran family Coreidae feed upon seeds or fruits. Hence a number of them are agricultural pests. There is one, *Anasa tristis,* that feeds on squashes in the USA and so gives the members of the family their common name. The new immature adults of *Coreus marginatus* emerge in late summer. They hibernate between October and April and become mature after a month. Mating occurs between early May and June, and old adults may live until late July. The bugs and nymphs feed on a variety of plants of the dock family (Polygonaceae). They are found in the edges of woods, in hedgerows and field margins and various types of wasteland.

The **Bulletin**
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Registrar – new address

Nick and Susan Holford are moving house around the time of publication of the *Bulletin,* all post is being redirected to their new address but please could telephone calls be postponed for the time being. New contact details will appear in the next *Bulletin.*

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Storm in Mexico devastates Monarch butterfly colonies

submitted by Richard Cawthorne

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After a severe winter storm in mid-January, in the mountains of central Mexico, dead Monarch butterflies lay in piles on the ground, in some places more than a foot high. Between 220 and 270 million frozen butterflies had rained down from roosts where they normally festooned towering trees, researchers estimated.

Most of the Monarchs in the two biggest colonies in Mexico were killed in the storm, in the largest known die-off ever of these butterflies. However, the loss of life is not expected to threaten the species.

In a report, Dr Lincoln Brower, of Sweet Briar College in Sweet Briar, Va., estimated that 74 percent at the Rosario colony had been killed. Along with a few smaller colonies, which scientists have not surveyed, the butterflies in these major colonies make up the entire breeding stock of Monarchs for the eastern United States and Canada.

The spectacle of the Monarchs' long and rugged mass migration north from Mexico each spring, a highly unusual behaviour for an insect, has made the species a favourite of nature lovers. The butterflies fly north, stopping to lay eggs in the southern United States. The Monarchs that develop from those eggs continue the journey, and by summer butterflies reach as far north as Canada.

The Monarchs' epic migration is so exceptional that scientists have called it an "endangered biological phenomenon." If the populations that fly north each year from Mexico were to disappear, the mysteries of that migration might never be solved.

While saying it was unlikely that a single event could ring the death knell for the Mexican Monarch populations, researchers said the radically reduced numbers left the butterflies vulnerable to future whims of the weather, disease and continuing deforestation in and around their winter resting grounds in Mexico.

Scientists will know in coming weeks how precarious the situation of the devastated populations has become, as they get a better sense of how many millions survived and what shape the butterflies are in as they begin to move north.

Casual observers are unlikely to notice an obvious drop in Monarch numbers this spring, in part because of the natural variability in population size from year to year.

The Rosario and Sierra Chincua colonies are thought to harbour perhaps two-thirds of all the butterflies in Mexico's Monarch sanctuaries, which are in mountains in the state of Michoacán, west of Mexico City.

The results of the report, based on research in late January, were released by World Wildlife Fund Mexico, which financed the research along with Sweet Briar College and the Monarch Butterfly Sanctuary Foundation.

Scientists who did not take part in the study expressed confidence in the team of researchers and the data, which have not yet been published in a scientific journal.

According to the report, the storm on 12th and 13th January dropped about four inches of rain in the area and was followed by freezing temperatures, a deadly combination as Monarchs are known to be particularly susceptible to freezing if they become wet. While noting that records were spotty, temperatures following the storm were the lowest recorded in the winter colonies in the last twenty-five years.

Because forest trees can act as an umbrella against the rain and a blanket that can retain heat, scientists and conservationists have been warning for years that the thinning of the forests in the relatively small area they have chosen for their habitats could threaten the butterflies by increasing their exposure to these elements. And an earlier study showed that in the last thirty years, nearly half the prime forest in the area had been degraded or destroyed.

Every year some of the millions of Monarchs that spend the winter in these high mountain forests die from predation, freezing or other causes. Last year, hundreds or thousands of butterflies were found dead in another colony, raising concern that they had been intentionally killed with pesticides. But the butterflies were found to be free of insecticides when tested in the laboratory, and scientists soon reached a consensus instead that a severe cold snap was the cause of death. Scientists still do not have precise estimates of the typical numbers of Monarchs that die in Mexico each winter, but researchers agree it is considerably lower than the estimates of mortality from the storm in January.

Scientists say Monarch butterflies tend to gather in similar densities in the colonies from year to year. As a result, the number of acres covered by Monarchs and counts of Monarch-filled trees are thought to provide reliable estimates of colony size. So researchers compared the size of the area covered by Monarchs and the numbers of trees, both before and after the storm, to determine the reduction in colony sizes.

The team also took random samples throughout the two colonies to estimate total numbers of dead Monarchs in the forests. It is feared that the numbers, if anything, are an underestimate of the actual death toll, as researchers only counted the butterflies on the ground. Reports from researchers in Mexico have stated that the storm had left Monarchs dead everywhere, including at their roosts in the trees.

Courtesy New York Times Website

Wood it be? Could it be?

by David Allen (11943)

9 Haw Bank Park, Stranocum, Ballymoney, Co. Antrim BT53 8PG.

We as a family headed off on a random drive – Sunday 27th May 2001. We ended up travelling down the eastern edge of Lough Neagh, discovering Portmore Nature Reserve (RSPB) and eventually stopping at Oxford Island Nature Reserve on the southern shore of the Lough.

On reading the information at the Discovery Centre we found that included in all the wildlife/fauna of the reserve, there was also to be found the Wood white butterfly (*Leptidea reali*).

It had been overcast and windy all day with a few showers but around 6 pm it brightened up. As we were leaving, along the drive out I spied two white butterflies fighting with the wind just above the long grass beyond the mown verge. I quickly jumped out and caught one with my son's homemade net.

My first ever encounter with the delicate Wood white. We headed home to Ballymena where we were living at the time. Next day, Monday and work, the day went by as normal Mondays do. The wind had picked up even more and was very strong and gusty – even the birds were hardly flying but the sun peeped through now and then.

Late in the afternoon, Denis, a fellow printer, came up to me with his hands cupped together. "Is this a moth or a butterfly?" he asked.

There in his hands was my second ever encounter with the Wood white butterfly, forty miles from my first and less than 24 hours between.

I never knew there were any present in the Ballymena area. He had found it behind his machine, flapping at the window and we presume that it had been blown into the pressroom through a fire exit that was propped open and facing the prevailing wind.

We took it outside and released it to freedom again. Wood it be, could it be, it was an amazing co-incidence!

The Hornet and Lunar hornet moths

by M. A. Spencer (10316)

I took an interest in the Hornet *Sesia apiformis* Clerck. and Lunar hornet *S. bembeciformis* Hb. species some years ago, when a close friend was trying to finish a book on moths and a few species (these two included) were somewhat elusive. I asked if they were really that much like wasps and on being told that they were I remembered seeing what I thought was a large sawfly on a Poplar trunk in my youth in Northamptonshire.

I then went back during the winter to hunt for the cocoons, the huge old black poplars were peppered with old Hornet moth exit holes, as if the base of the trees had been shot at point blank range with an elephant gun! However, finding unhatched cocoons proved to be a very difficult task indeed! I was not alone either, as, flying along from tree to tree, just before I got there was a Greater spotted woodpecker, obviously seeking similar prey! A very long search finally seemed to reap its reward as I found the famed capped hole. With great excitement and as much care as I could muster, I began the delicate task of removing the hoped for prize with a hammer and chisel, not for the fainthearted and not for the conservation minded these days! I finally removed an undamaged cocoon containing a healthy pupa. Now something had to be very wrong, the species I sought should still be a larva! Here was a healthy undersized pupa in what was definitely a Hornet moth's chamber. I took it home and it emerged later as a Poplar grey moth *Acronicta megacephala*, having obviously reused a good safe pupation site!

I never did find a live Hornet moth larva, however, at the same site I searched sallows and eventually found a perfect perforated circle of holes in the bark, low down about 15 cms from the roots and amongst long grass. I set to with the chisel and at a depth of 2.5 cms and approximately 7 cms above the holes was the first larva I ever found, lying head down in the tunnel. The sallow was quite young and only about 7cms in diameter.

Revisiting the site the following summer (the first week in July) hit the jackpot, the first big Black poplar had a huge and perfect female sitting boldly on the base of the trunk. It doesn't matter how well you know this species you always resist handling it at first, it so resembles a large stinging insect!

Further around the same site I found a pair of Hornet moths *in cop*; it was amazing, all the previous work and trouble and now all so easy.

The female of this species hardly seems to fly and most will just lay their eggs on the tree from which they emerge, thus it is locally common, but rarely spreads. The particular location for this species is in a well known and used public park and I have always been troubled as to whether or not to publicise its whereabouts. I think this wonderful species should be protected and its habitat guarded as it could easily be wiped out, especially through a misunderstanding as a dangerous pest species (although completely innocent bluff!). I have always been torn between reporting its presence in the hopes of protecting it or drawing attention to it and causing its demise. Please can anyone advise on this?

I have never found the Hornet moth in the south of the country to date, though I still live in hope, but the Lunar hornet definitely occurs here, though much harder to find as the females of this species distribute their eggs far and wide.

An African Ladybird, *Cheilomenes lunata* (Fab.), and the AES Forum Website

by [1]*Paul Boswell (2853) &* [2]*Paul Mabbott*

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On 7th January 2002 my wife found a ladybird in our kitchen in Greywell, Hampshire. I did not recognise it in spite of its very distinctive markings. It was near a bag of South African grapes which had been purchased in the Tesco supermarket in Hook, Hampshire on 13th December 2001. The grapes had been kept refrigerated since their purchase. I decided that it was likely that this was the source of the ladybird. I took a pair of digital photographs (see Fig. 1) and posted them on the AES members forum on the internet. Within a few hours I had the answer from Paul Mabbott posted on the website.

I would urge all AES members who have internet access to use this new facility. It is an excellent way of solving your entomological problems. *Paul Boswell*

On 8th January 2002 I saw the two pictures of a ladybird posted at the AES forum. I immediately recognised it as *Cheilomenes lunata* (Fab.), Coleoptera: Coccinellidae. I was in the fortunate position of having been given another example of this ladybird on 26th December 2001.

John Muggleton had kindly identified it for me. It too had originated with grapes in a Tesco supermarket, this time in London. *C. lunata* is native to south and central Africa. I believe that these are the first two to have been found in the United Kingdom. Including these finds, a total of seven incidences are now known from around Britain. A full account of these will be published later. It has taken a period of just five weeks for these records to be collected using the internet. How long would this have taken using word of mouth or the written word?

Paul Mabbott

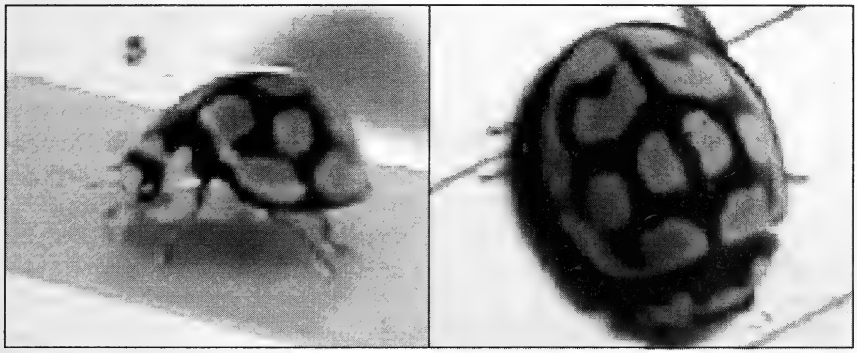

Figure 1. The original pictures of the 6mm-long ladybird, *Cheilomenes lunata,* as posted on the web.

Striped hawk-moth in North London

by Alan Bolitho (7931)

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Rumaging through the loft recently, I came across the remains of my boyhood butterfly and moth collection. A single storage box housed the remains, ravaged by mites and many years of total neglect. Looking at the sad remnants brought back many memories and a realisation that here were unpublished records.

My early memories of the visits to London with my mother to buy the necessary equipment, up those dark stairs in the Strand to the wondrous shop of Watkins and Doncaster. The excitement of the capture. Answering an uncle's telephone call, a cycle ride and there waiting patiently under a pudding basin on his doorstep was a Deaths-head hawk-moth, which is still in passable condition. The Small blue, the Pearl bordered fritillary and many others taken when out with J. H. Bell the Hertfordshire naturalist. The pride of place had to be the bedraggled remains of a Striped hawk-moth found in a neighbour's garden. Here I have to admit, found by a jubilant younger brother, as stated on the label, on 4th June 1943.

According to Colin Plant in his *Larger Moths of the London Area*, there was only one record of this moth in 1943 and that was in Regents Park. I can now record that there was a second one in Winchmore Hill, London N21. How many other records are there in similar collections?

Figure 1. Colin Plant acknowledged the record pointing out that this was the second for 1943 in Middlesex! Obviously this can now be described as a "good year".

A report on some of the Lepidoptera recorded in Cornwall, (early and late dates)

by John L. Gregory

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One of my childhood memories is of possessing for a short while a little book, entitled *Moths of the Month*. I remember that it was in very poor condition, and had some of its pages missing or on the point of falling out, though unfortunately I do not remember the name of the author, or what eventually happened to the book, and I regretfully assume that it was at some time thrown out with the rubbish. Even at that time of my young life I was very interested in caterpillars and finding out what kinds of moths they would eventually turn into, but it was still a number of years before my interest in caterpillars had grown into the obsession which later developed, from such a small beginning.

Moths of the Month would not be a very accurate appellation for the following list though, because of the wide temporal spread of the appearance of most of the moths and butterflies which I have personally recorded free-flying in the natural wild state on numerous sites scattered throughout Cornwall, or in a very few cases in some western parts of Devon. For convenience I have confined this report to the period January 1988 to December 2001, omitting a small number of very doubtful identifications and a few species which I last encountered in the wild more than fourteen years ago. Almost all of the identifications are from macroscopic characters, and only a few of them are from some genitalia checks which were made by Dr F. H. N. Smith and by the late P. N. Siddons, whose help is here very gratefully acknowledged. Therefore I am responsible for any errors of identification in this report, and it is only in a few cases where two or more species are superficially very similar in appearance that the odd misidentification or two could have found its way into my records.

The records are from moths noted at mercury vapour light, and at lighted windows, many of them at my home in Cornwall, and also from observations of day-flying species. I here acknowledge with grateful thanks, the records I have incorporated here which are the result of past "moth-nights" with P. H. Boggis, W. G. Kittle, and L. Slaughter in various parts of Cornwall.

I have not included in this list the large numbers of records which I made prior to January 1988, or any of my records of the pre-adult stages in the life-cycles, as to include such full details would greatly

extend the length of the list, though I have included a couple of records which are clearly the results of escapes from a now non-existent tropical butterfly house. These records are entirely the result of such things as where I have been and when, weather conditions at the times of visits to the sites, and, of course, time of year. Of course, the "Foot & Mouth" restrictions of 2001 will have had some influence on the records, though the overall species-count for the year was not as low as might be expected. The following data are very much condensed from my main site-records, and more details can be supplied to readers of this *Bulletin*, if requested.

I should explain here that the numbering used here is entirely my own, the system having been developed by me over very many years of studying Lepidoptera. After each name, my earliest to latest dates are followed in brackets by the number of years during the last fourteen that the free-flying adults were recorded.

The list shows the situation as existing in my records as at the end of December 2001, but future observations may result in the lengthening of some of the flight periods shown, with perhaps (hopefully) a few additional species too.

L56 *Epinotia abbreviana*, 17/ 7, (1)
L873 *Eupithecia abbreviata* (Brindled pug), 11/3 to 22/5, (14)
G1059 *Dioryctria abietella*, 9/7 to 2/8, (2)
L7 *Eupithecia absinthiata* (Wormwood pug), 22/6 to 29/8, (13)
G904 *Dichrorampha acuminatana*, 2/8 to 25/8, (1)
G1336 *Scrobipalpa acuminatella*, 21/5, & 25/7, (2)
L1285 *Argynnis adippe* (High brown fritillary), 4/7, (1)
L751 *Ligdia adustata* (Scorched carpet), 28/4 to 7/8, (7)
L1494 *Trachycera advenella*, 22/7 to 4/9, (13)
L251 *Pararge aegeria* (Speckled wood), 24/3 to 4/11, (14)
L1205 *Epermenia aequidentellus*, 18/5 to 25/5, & 29/6, (3)
G1305 *Ptycholomoides aeriferanus*, 19/7, (1)
L112 *Alsophila aescularia* (March moth), 17/2 to 6/5, (14)
L57 *Hemithea aestivaria*, 16/6 to 15/8, (14)
G1188 *Bryotropha affinis*, 11/6 to 1/8, (4)
L199 *Perizoma affinitata* (Rivulet), 5/5 to 15/9, (14)
G127 *Aricia agestis* (Brown argus), 22/5, & 12/8, (2)
L1108 *Argynnis aglaja* (Dark green fritillary), 25/6 to 20/8, (6)
L546 *Paraswammerdamia albicapitella*, 1/6 to 27/6, & 18/8 to 27/8, (4)
L465 *Mesoleuca albicillata* (Beautiful carpet), 12/6 to 6/8, (7)
L568 *Coleophora albicosta*, 1/5 to 19/6, (10)
L412 *Colephora albidella*, 27/6 to 21/7, (3)
L471 *Elachista albifrontella*, 18/6 to 5/7, (1)

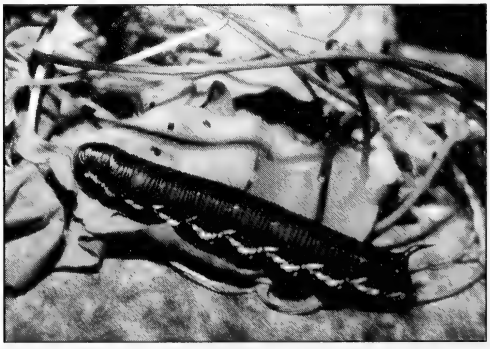
G1257 *Mythimna albipuncta* (White point), 1/9, & 24/10, (2)
L1316 *Argyresthia albistria*, 13/5, & 2/7 to 11/9, (6)
L876 *Meganola albula* (Kent black arches), 10/7, (1)
G167 *Asthenia albulata* (Small white wave), 28/4 to 20/8, (13)
G329 *Perizoma albulata* (Grass rivulet), 20/5 to 5/7, (5)
L785 *Perizoma alchemillata* (Small rivulet), 18/6 to 7/8, (12)
L150 *Caloptilia alchimiella*, 8/6 to 25/7, (4)
L921 *Acronicta alni* (Alder moth), 31/5 to 24/6, (5)
L501 *Ennomos alniaria* (Canary shouldered thorn), 1/8 to 20/9, (11)
L601 *Hoplodrina alsines* (Uncertain), 14/6 to 9/8, (14)
L1448 *Agonopterix alstromeriana*, 11/5, (1)
L128 *Epirrhoe alternata* (Common carpet), 18/4 to 22/9, (14)
L380 *Macaria alternata* (Sharp angled peacock), 12/5 to 3/9, (14)
L1074 *Tortricodes alternella*, 7/2 to 15/3, (4)
L341 *Coleophora alticolella*, 27/5 to 13/7, (12)
L1023 *Hoplodrina ambigua* (Vine's rustic), 11/7, (1)
L699 *Scoparia ambigualis*, 10/5 to 3/9, (13)
L127 *Peridea anceps* (Great prominent), 21/4 to 1/6, (6)
L283 *Agonopterix angelicella*, 10/7 to 22/7, (3)
L336 *Parornix anglicella*, 24/5, & 11/8 to 22/8, (3)
L868 *Eupoecilia angustana*, 4/5 to 18/9, (13)
L523 *Eudonia angustea*, throughout the year, (14)
L174 *Ditula angustiorana* (Red barred tortrix), 21/6 to 4/8, (6)
G258 *Stilbia anomala* (Anomalous), 8/9, (1)
L747 *Dichonia aprilina* (Merveille du jour), 25/9 to 31/10, (6)
L300 *Agonopterix arenella*, 20/2, & 6/4 to 17/10, (14)
L673 *Xylocampa areola* (Early grey), 21/2 to 20/5, (14)
L64 *Elachista argentella*, 2/5 to 6/ 7, (14)
G891 *Infurcitinea argentimaculella*, 17/7, (1)
L569 *Coleophora argentula*, 24/6 to 27/6, (3)
L1046 *Celastrina argiolus* (Holly blue), 17/3 to 22/9, (11)
G100 *Plebejus argus* (Silver studded blue), 14/6 to 15/7, (6)
L1469 *Helicoverpa armigera* (Scarce bordered straw), 7/8 to 3/9, (1)

L1469 *Helicoverpa armigera* (Scarce bordered straw)

G1147 *Coleophora artemisicolella*, 9/7, (1)
G51 *Micropterix aruncella*, 4/4 to 5/8, (12)
G713 *Mecyna asinalis*, 19/6 to 17/8, & 22/9, & 22/10, (5)
L289 *Acleris aspersana*, 9/8, (1)
L67 *Cnephasia asseclana* (Flax tortrix), 19/6 to 1/8, (11)
L828 *Eupithecia assimilata* (Currant pug), 14/5 to 20/8, (10)
L8 *Vanessa atalanta* (Red admiral), 18/3 to 19/11, (14)
L1137 *Melitaea athalia* (Heath fritillary), 13/6 to 30/6, (3)
L676 *Ematurga atomata* (Common heath), 30/4 to 23/6, (6)
L770 *Odezia atrata* (Chimney sweeper), 11/6, (1)
G1258 *Eulamprotes atrella*, 17/7 to 3/8, (8)
L491 *Elachista atricomella*, 28/5 to 6/6, (3)
L865 *Acherontia atropos* (Death's head hawk), 20/5, (1)
G55 *Pammene aurana*, 10/6 to 3/7, (3)
L237 *Agriopis aurantiaria* (Scarce umber), 3/12 to 21/12, (4)
L686 *Pyrausta aurata*, 18/7, (1)
G660 *Micropterix aureatella*, 12/5, (1)
L296 *Stigmella aurella*, 5/2 to 29/8, & 29/11, (11)
L362 *Euphydryas aurinia* (Marsh fritillary), 27/5 to 8/6, (4)
G911 *Pammene aurita*, 15/7 to 7/8, (3)
G1229 *Eucalybites auroguttella*, 25/8, (1)
G1175 *Argyresthia aurulentella*, 9/9, (1)
L1100 *Epirrita autumnata* (Autumnal moth), 5/10 to 9/11, (13)
L99 *Acrolepia autumnitella*, 18/10 & 21/2, (2)
L319 *Idaea aversata* (Riband wave), 25/5 to 30/9, (14)
L1233 *Caloptilia azaleella* (Azalea leaf miner), 14/8, (1)
L864 *Anticlea badiata* (Shoulder stripe), 18/3 to 19/5, (13)
L1461 *Xestia baja* (Dotted clay), 3/8 to 11/8, (3)
L104 *Thyatira batis* (Peach blossom), 4/5 to 29/8, (14)
L144 *Parornix betulae*, 15/,& 26/8, (2)
L19 *Biston betularia* (Peppered moth), 24/4 to 13/8, (13)
L976 *Apotomis betuletana*, 9/7 to 26/8, (6)
L614 *Caloptilia betulicola*, 21/4, (1)
L853 *Bena bicolorana* (Scarce silver lines), 18/7 to 21/7, (2)
L170 *Hecatera bicolorata* (Broad barred white), 30/5 to 9/7, (10)
L454 *Hadena bicruris* (Lychnis), 23/4 to 3/9, (14)
L22 *Odontopera bidentata* (Scalloped hazel), 16/4 to 15/7, (14)
G239 *Perizoma bifaciata* (Barred rivulet), 3/7 to 20/7, (3)
G1206 *Piniphila bifasciana*, 9/6 to 19/7, (2)
L1140 *Apodia bifractella*, 5/8, (1)
L10 *Camptogramma bilineata* (Yellow shell), 2/6 to 3/9, (13)
G1486 *Epinotia bilunana*, 21/6, (1)
L453 *Lomographa bimaculata* (White pinion spotted), 23/4 to 1/7, (14)
G1119 *Phycitodes binaevella*, 18/6 to 25/7, (8)
L1050 *Watsonalla binaria* (Oak hook tip), 7/8, (1)
G254 *Stenoptilia bipunctidactyla*, 5/6 to 2/8, (8)

L443 *Idaea biselata* (Small fan footed wave), 18/6 to 15/9, (14)
G1158 *Apomyelois bistriatella*, 13/7, (1)
L476 *Cryptoblabes bistriga*, 19/6 to 27/7, (10)
L305 *Phyllonorycter blancardella*, 2/5, & 16/6 to 27/9, (5)
L189 *Hoplodrina blanda* (Rustic), 27/6 to 16/8, (14)
G109 *Brachmia blandella*, 9/7 to 5/8, (10)
L708 *Caryocolum blandella*, 22/7 to 7/8, (3)
G1278 *Discoloxia blomeri* (Blomer's rivulet), 22/6 to 18/7, (2)
L49 *Argyresthia bonnetella*, 17/7 to 2/8. 1992, (3)
L41 *Mamestra brassicae* (Cabbage moth), 25/5 to 9/8,(8)
L5 *Pieris brassicae* (Large white), 8/4 to 14/10, (14)
L1289 *Aristotelia brizella*, 23/7, (1)
L684 *Thera britannica* (Spruce carpet), 30/3 to 15/7, & 15/8 to 31/10, (13)
L648 *Argyresthia brockeella*, 19/6 to 11/8, (4)
L136 *Operophtera brumata* (Winter moth), 26/11 to 26/ 2, (14)
L239 *Diarsia brunnea* (Purple clay), 29/5 to 8/8, (14)
L175 *Phalera bucephala* (Buff tip), 14/5 to 1/8, (10)
L552 *Coleophora caespititiella*, 6/6 to 9/7, (5)
L66 *Yponomeuta cagnagella* (Spindle ermine), 7/7 to 21/7, (6)
L42 *Arctia caja* (Garden tiger), 12/7 to 21/7, (4)
L123 *Polygonia c-album* (Comma), 11/3 to 28/5, & 18/7 to 19/10, (13)
G1155 *Platyptilia calodactyla*, 18/6, (1)
G106 *Micropterix calthella*, 22/4 to 16/6, (14)
G1379 *Eucosma campoliliana*, 4/7, (1)
L598 *Eucosma cana*, 30/5 to 9/8, (14)
L513 *Elachista canapennella*, 19/4 to 24/6, & 29/7, (4)
G699 *Eilema caniola* (Hoary footman), 27/6 to 9/8, (4)
L939 *Epinotia caprana*, 14/7, (1)
L271 *Ptilodon capucina* (Coxcomb prominent), 9/5 to 29/8, (14)
L1490 *Oegoconia caradjai*, 17/6 to 29/8, (11)
L349 *Anthocharis cardamines* (Orange tip), 8/4 to 17/6, (13)
L233 *Vanessa cardui* (Painted lady), 13/4 to 25/10, & 3/12, (14)
L798 *Trichopteryx carpinata* (Early tooth striped), 3/3 to 20/5, (14)
L665 *Xestia castanea* (Neglected rustic), 1/9 to 4/9, (1)
L169 *Eupithecia centaureata* (Lime speck pug), 27/6 to 4/8, (4)
G168 *Atethmis centrago* (Centre barred sallow), 2/9 to 6/9, (5)
L11 *Pandemis cerasana* (Barred fruit tree tortrix), 8/6 to 11/9, (14)
L143 *Orthosia cerasi* (Common quaker), 4/3 to 8/6, (14)
L1006 *Platytes cerussella*, 28/5 to 10/7, (4)
L850 *Tholera cespitis* (Hedge rustic), 28/8, (1)
L988 *Epermenia chaerophyllella*, 8/5, & 22/8 to 11/11, (2)
L881 *Scotopteryx chenopodiata* (Shaded broad bar), 18/7 to 20/8, (9)
L625 *Petrophora chlorosata* (Brown silver line), 14/4 to 13/7, (14)
L1127 *Epirrita christyi* (Pale november moth), 9/10 to 7/11, (8)
L343 *Diachrysia chrysitis* (Burnished brass), 20/5 to 25/9, (14)
L188 *Hemistola chrysoprasaria* (Small emerald), 24/7, (1)

L638 *Euproctis chrysorrhoea* (Brown tail), 19/7, (1)
L223 *Agonopterix ciliella*, 20/9, (1)
G366 *Pyrausta cingulata*, 27/5, & 15/7, (2)
L1176 *Pandemis cinnamomeana* (19/8, (1)
L793 *Agrochola circellaris* (Brick), 23/10 to 26/10, (2)
L1281 *Myelois circumvoluta* (Thistle ermine), 19/6 to 23/7, (3)
G289 *Epiblema cirsiana*, 27/5 to 11/7, (9)
G79 *Chloroclysta citrata* (Dark marbled carpet), 24/6 to 20/8, (6)
L681 *Paradrina clavipalpis* (Pale mottled willow), 22/5 to 9/11, (12)
L1255 *Agrotis clavis* (Heart & club), 16/6 to 21/7, (12)
G1047 *Nemapogon clematella*, 22/6 to 4/9, (8)
L235 *Lyonetia clerkella* (Apple leaf miner), 25/6 to 27/9, & 22/11, (4)
L1000 *Nemapogon cloacella*, 11/5 to 28/7, (6)
G1412 *Earis clorana* (Cream bordered green pea), 18/7, (1)
G411 *Aethes cnicana*, 14/6, (1)
L519 *Xestia c-nigrum* (Setaceous hebrew character), 11/5 to 16/10, (14)
L266 *Pseudoswammerdamia combinella*, 5/5 to 28/7, (13)
L424 *Timandra comae* (Blood vein), 1/5 to 20/9, (13)
L978 *Acleris comariana* (Strawberry tortrix), 18/8, (1)
L185 *Noctua comes* (Lesser yellow underwing), 9/7 to 30/9, (13)
L1324 *Mythimna comma* (Shoulder striped wainscot), 28/5 to 19/7, (14)
L1145 *Eilema complana* (Scarce footman), 16/7 to 1/9, (2)
L1213 *Grapholita compositella*, 13/5 to 31/5, (3)
L1223 *Hadena confusa* (Marbled coronet), 2/5, & 16/6 to 2/8, (4)
L802 *Nola confusalis* (Least black arches), 21/4 to 13/6, (14)
L211 *Clepsis consimilana*, 13/6 to 17/8, & 4/10, & 5/11, (13)
L487 *Acrobasis consociella*, 21/7, (1)
L585 *Paradarisa consonaria* (Square spot), 21/4 to 29/6, & 19/8, (8)
L76 *Cnephasia conspersana*, 5/7 to 9/8, (5)
L604 *Agonopterix conterminella*, 30/7, (1)
L1156 *Lacanobia contigua* (Beautiful brocade), 27/6 to 8/7, (2)
L1488 Agrius convolvuli (Convolvulus hawk), 1/9 to 3/9, (1)



L1488 *Agrius convolvuli* (Convolvulus hawk), larva on *Calystegia* (Bindweed).

L478 *Pseudargyrotoza conwagana*, 10/6 to 31/7, (10)
L485 *Phlyctaenia coronata*, 27/6 to 15/8, (5)
G1144 *Lampronia corticella* (Raspberry moth), 29/6 to 25/7, (2)
L1143 *Pandemis corylana* (Chequered fruit tree tortrix), 19/6 to 11/9, (9)
L375 *Electrophaes corylata* (Broken barred carpet), 4/5 to 13/7, (12)
L932 *Colocasia coryli* (Nut tree tussock), 2/5 to 31/5, & 9/7 to 17/8, (14)
L335 *Phyllonorycter coryli* (Nut leaf blister moth), 7/5 to 3/6, & 1/8, (3)
L299 *Phyllonorycter corylifoliella*, 3/8, (1)
L1254 *Schrankia costaestrigalis* (Pinion streaked snout), 12/6 to 16/9, (9)
L827 *Hypsopygia costalis* (Gold triangle), 20/5 to 16/9, (14)
L333 *Scrobipalpa costella*, 15/5 to 9/6, & 27/7 to 10/10, (6)
G930 *Epiblema costipunctana*, 24/6 to 2/7, (4)
L1273 *Hypena crassalis* (Beautiful snout), 19/6 to 30/7, (11)
L153 *Apamea crenata* (Clouded bordered brindle), 27/4 to 24/7, (14)
L623 *Ectropis crepuscularia* (Small engrailed), 14/4, & 17/3 to 18/7, (14)
G1281 *Pseudopostega crepusculella*, 4/7 to 1/8, (3)
L65 *Ebulea crocealis*, 24/6 to 29/7, (10)
L248 *Colias croceus* (Clouded yellow), 15/5, & 21/6 to 8/10, (7)
G1474 *Adela croesella*, 13/6, (1)
L45 *Epinotia cruciana* (Willow tortrix), 11/6 to 11/7, (6)
L582 *Orthosia cruda* (Small quaker), 10/3 to 25/4, (8)
L641 *Catarhoe cuculata* (Royal mantle), 19/6 to 24/7, (7)
L520 *Chrysoteuchia culmella*, 22/5 to 3/9, (14)
L879 *Epiblema cynosbatella*, 20/5 to 27/6, (10)
G1189 *Monochroa cytisella*, 27/6 to 16/8, (5)
L89 *Depressaria daucella*, 29/1 to 30/5, & 17/8, & 28/9 to 27/10, & 28/11 to 2/12, (10)
L488 *Gypsonoma dealbana*, 9/7 to 8/8, (7)
L928 *Pasiphila debiliata* (Bilberry pug), 8/7, (1)
G98 *Tholera decimalis* (Feathered gothic), 5/9 to 9/9, (2)
G1299 *Blastobasis decolorella*, 3/8, (1)
L1116 *Carpatolechia decorella*, 7/8, (1)
L137 *Erannis defoliaria* (Mottled umber), 27/10 to 13/2, (13)
L1191 *Nemophora degeerella*, 18/5 to 28/6, (11)
G418 *Eudonia delunella*, 22/6 to 23/7, (7)
L328 *Buccalatrix demaryella*, 28/5 to 27/6, (3)
L286 *Selenia dentaria* (Early thorn), 7/2 to 13/5, & 4/7 to 9/9, (14)
L58 *Ypsolopha dentella* (Honeysuckle moth), 16/7 to 3/9, (9)
L517 *Eilema depressa* (Buff footman), 4/7 to 24/8, (11)
L959 *Anticlea derivata* (Streamer), 9/4 to 16/5, (7)
L860 *Xanthorhoe designata* (Flame carpet), 30/4 to 24/6, & 29/7 to 4/9, (13)
L1203 *Pyrausta despicata*, 7/5 to 25/8, (4)
L466 *Parornix devoniella*, 13/5 to 28/5, & 4/7 to 30/8, (6)
L1089 *Mesapamea didyma* (Lesser common rustic), 5/7 to 8/9, (13)
L789 *Perizoma didymata* (Twin spot carpet), 16/7 to 22/7, (2)
L1211 *Teleiopsis diffinis*, 27/6 to 10/9, (5)
G1342 *Argyresthia dilectella*, 17/7, & 21/8, (2)

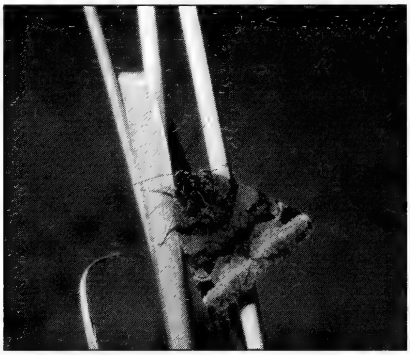
L97 *Epirrita dilutata* (November moth), 12/10 to 5/12, (14)
L1256 *Pempeliella dilutella*, 17/6 to 2/8, (3)
L345 *Idaea dimidiata* (Single dotted wave), 25/5 to 11/9, (14)
L77 *Coleophora discordella*, 24/6 to 16/7, (2)
G1224 *Eupithecia distinctaria* (Thyme pug), 18/6 to 29/7, (4)
G1266 *Exoteleia dodecella*, 9/6 to 15/8, (4)
G359 *Drymonia dodonaea* (Marbled brown), 12/5 to 13/6, (7)
G677 *Eupithecia dodoneata* (Oak tree pug), 15/4 to 18/6, (11)
L926 *Plagodis dolabraria* (Scorched wing), 12/5 to 25/7, (12)
L1014 *Bryotropha domestica*, 1/8 to 22/8, (9)
G182 *Cryphia domestica* (Marbled beauty), 23/6 to 23/8, (13)
L348 *Callimorpha dominula* (Scarlet tiger), 22/6 to 23/7, (8)
L866 *Notodonta dromedarius* (Iron prominent), 8/4 to 24/8, (12)
L809 *Tinea dubiella*, 15/6 to 25/8, (9)
L158 *Ochropacha duplaris* (Common lutestring), 11/5 to 17/7, (10)
L467 *Crocallis elinguaria* (Scalloped oak), 4/7 to 16/8, (14)
L172 *Deilephila elpenor* (Elephant hawk), 28/5 to 13/8, (13)
L822 *Ephestia elutella* (Cacao moth), 19/6 to 5/8, & 18/9, (6)
L198 *Acleris emargana*, 6/8 to 18/9, (12)
G1387 *Acentria ephemerella* (Water veneer), 18/8, (1)
G1475 *Apamea epomidion* (Clouded brindle), 19/6, (1)
G1152 *Neofaculta ericetella*, 27/5 to 28/5, (2)
L655 *Yponomeuta evonymella* (Bird cherry ermine), 6/7 to 10/7, (1)
L165 *Cabera exanthemata* (Common wave), 30/4 to 7/9, (14)
L562 *Agrotis exclamationis* (Heart & dart), 13/5 to 18/10, (14)
L1538 *Spodoptera exigua* (Small mottled willow), 19/6, & 24/8 to 3/9, (1)
L893 *Eupithecia expallidata* (Bleached pug), 9/6, & 24/7 to 13/8, (5)
L1077 *Boloria euphrosyne* (Pearl bordered fritillary), 13/5 to 11/6, (5)
G665 *Eupithecia exiguata* (Mottled pug), 12/5 to 13/6, (3)
L3 *Anthophila fabriciana*, 21/4 to 2/11, (14)
L140 *Diurnea fagella*, 21/2 to 7/4, (13)
L1410 *Stauropus fagi* (Lobster moth), 23/5 to 18/7, (11)

L1410 *Stauropus fagi* (Lobster moth), larva preparing to moult.

L1410 *Stauropus fagi* (Lobster moth).

G1145 *Cydia fagiglandana*, 8/6 to 17/7, (3)
L192 *Drepana falcataria* (Pebble hook tip), 12/5 to 24/8, (9)
G678 *Epermenia falciformis*, 4/9, (1)
L1202 *Pyralis farinalis* (Meal moth), 2/8, (1)
G476 *Pammene fasciana*, 18/5 to 18/7, (3)
L933 *Hylaea fasciaria* (Barred red), 7/7, (1)
G232 *Oligia fasciuncula* (Middle barred minor), 20/5 to 4/7, (11)
L919 *Ochlodes faunus* (Large skipper), 12/5 to 30/7, (13)
L566 *Mythimna ferrago* (Clay), 16/6 to 16/8, (14)
L133 *Udea ferrugalis* (Rusty dot pearl), 23/2, & 14/4 to 4/12, (14)
L516 *Acleris ferrugana*, 6/11 to 23/3, & 4/7 to 20/8, (9)
L221 *Xanthorhoe ferrugata* (Dark barred twin spot carpet), 14/5 to 3/9, (10)
L629 *Rusina ferruginea* (Brown rustic), 14/5 to 30/6, (12)
L1338 *Schreckensteinia festaliella*, 10/4 to 30/4, & 31/8 to 3/9, (4)
G26 *Plusia festucae* (Gold spot), 25/6 to 2/7, & 6/8 to 2/9, (4)
G467 *Adela fibulella*, 26/5 to 9/6, (2)
L303 *Psychoides filicivora*, 28/4 to 17/7, & 20/9 to 19/10, (11)
L2 *Zygaena filipendulae* (Six spot burnet), 18/6 to 27/8. 2001, (14)
L1196 *Noctua fimbriata* (Broad bordered yellow underwing), 29/7 to 3/9, (4)
L780 *Panolis flammea* (Pine beauty), 21/4 to 9/6, (2)
L1225 *Endotricha flammealis*, 19/6 to 15/8, (7)
G673 *Hydrelia flammeolaria* (Small yellow wave), 19/6 to 19/7, (5)
L63 *Gortyna flavago* (Frosted orange), 17/8 to 11/10. 1994, (14)
L85 *Polymixis flavicincta* (Large ranunculus), 9/9 to 26/10, (12)
L750 *Achlya flavicornis* (Yellow horned), 24/2 to 2/3, (2)
L489 *Dichrorampha flavidorsana*, 9/7, (1)
L600 *Perizoma flavofasciata* (Sandy carpet), 5/5 to 15/8, (14)
L442 *Scopula floslactata* (Cream wave), 4/5 to 24/6, (13)
L653 *Stigmella floslactella*, 25/4 to 7/5, (3)
L52 *Xanthorhoe fluctuata* (Garden carpet), 14/3 to 8/11, (14)
L294 *Coleophora follicularis*, 9/7, (1)
L68 *Evergestis forficalis* (Garden pebble), 25/5 to 28/9, (13)
G1304 *Donacaula forficella*, 8/9, (1)
G1477 *Enarmonia formosana* (Cherry bark tortrix), 18/7, (1)
G427 *Acleris forsskaleana*, 28/7 to 13/8, (5)
L60 *Lozotaenia forsterana*, 19/6 to 15/7, (6)
G1021 *Glyphipterix forsterella*, 17/6, (1)
L784 *Prays fraxinella* (Ash bud moth), 30/6 to 29/7, (5)
G1404 *Carpatolechia fugitivella*, 3/8, (1)
L33 *Phragmatobia fuliginosa* (Ruby tiger), 1/5 to 28/5, & 12/7 to 6/9, (12)
L754 *Cidaria fulvata* (Barred yellow), 27/6 to 21/7, (7)
G1378 *Triaxomera fulvimitrella*, 11/6, (1)
L70 *Hydriomena furcata* (July highflyer), 18/6 to 22/9, (14)
L727 *Furcula furcula* (Sallow kitten), 12/5 to 18/8, (7)
L936 *Mesologia furuncula* (Cloaked minor), 4/7 to 18/8, (12)
G377 *Pyla fusca*, 27/6, (1)

L542 *Opsibotys fuscalis*, 20/5 to 2/7, (5)
L786 *Ennomos fuscantaria* (Dusky thorn), 8/8 to 9/9, (2)
G1019 *Niditinea fuscella* (Brown dotted clothes moth), 30/4, & 14/6 to 5/7, & 20/8, (5)
L636 *Idaea fuscovenosa* (Dwarf cream wave), 14/6 to 10/7, (3)
G1289 *Glyphipterix fuscoviridella*, 14/5 to 9/6, (4)
L882 *Melanargia galathea* (Marbled white), 21/6 to 23/7, (4)
L679 *Epirrhoe galiata* (Galium carpet), 19/6 to 9/9, (8)
L6 *Autographa gamma* (Silver Y), 28/4 to 2/11, (14)
G743 *Ancylis geminana*, 24/6, (1)
L858 *Archanara geminipuncta* (Twin spotted wainscot), 3/8, (1)
L818 *Agriphila geniculea*, 20/7 to 21/9, (11)
L194 *Phyllonorycter geniculella*, 6/8, (1)
L787 *Psoricoptera gibbosella*, 24/8, (1)
L884 *Eugnorisma glareosa* (Autumnal rustic), 26/9 to 18/10, (7)
L728 *Cilix glaucata* (Chinese character), 5/5 to 19/6, & 22/7 to 25/8, (9)
L1238 *Coleophora glaucicolella*, 24/6 to 3/8, (7)
L1460 *Euclidia glyphica* (Burnet companion), 24/5 to 21/6, (4)



L1460 *Euclidia glyphica* (Burnet companion).

L633 *Pheosia gnoma* (Lesser swallow prominent), 24/6 to 2/7, & 11/8 to 15/8, (4)
L645 *Argyresthia goedartella*, 12/7 to 26/8, (3)
L139 *Orthosia gothica* (Hebrew character), 14/1 to 8/6, (14)
L451 *Orthosia gracilis* (Powdered quaker), 8/4 to 13/5, (4)
L1267 *Cerapteryx graminis* (Antler moth), 16/8 to 27/8, (2)
L556 *Scythris grandipennis*, 9/7, (1)
L1486 *Herminia grisealis* (Small fan foot), 18/5 to 13/8, (14)
L392 *Achroia grisella* (Lesser wax moth), 27/7 to 9/8, (2)
L432 *Eilema griseola* (Dingy footman), 4/7 to 25/8, (13)
L40 *Abraxas grossulariata* (Magpie), 27/6 to 3/9, (14)
G1430 *Lobophora halterata* (Seraphim), 23/5, (1)
L108 *Agapeta hamana*, 25/5 to 18/9, (14)
L870 *Phyllonorycter harrisella*, 3/6, & 30/7 to 15/8, (3)
L131 *Acleris hastiana*, 25/10 to 28/3, & 18/6 to 6/8, & 13/9, (12)

G202 *Eupithecia haworthiata* (Haworth's pug), 5/7 to 3/8, (2)
L155 *Blastodacna hellerella*, 25/6 to 29/7, (7)
L1045 *Agrochola helvola* (Flounced chestnut), 15/9 to 19/10, (2)
L50 *Pandemis heparana* (Dark fruit tree tortrix), 25/6 to 17/8, (14)
L951 *Lithophane hepatica* (Pale pinion), 27/3 to 22/5, & 27/9, (5)
L83 *Agonopterix heracliana*, throughout the year, (14)
G1441 *Diplodoma herminata*, 30/6, (1)
L790 *Alucita hexadactyla* (Twenty plume), throughout the year, (14)
L1090 *Phyllonorycter hilarella*, 6/8, (1)
L241 *Lycia hirtaria* (Brindled beauty), 15/4 to 15/5, (7)
L1440 *Eucosma hohenwartiana*, 5/7 to 10/8, (11)
L36 *Eurrhypara hortulata* (Small magpie), 22/5 to 15/8, (14)
L344 *Hepialus humuli* (Ghost moth), 9/6 to 23/7, (9)
L135 *Stigmella hybnerella*, 4/9, (1)
L117 *Aphantopus hyperantus* (Ringlet), 20/6 to 12/8, (14)
L1334 *Elymnias hypermnestra* (Common palmfly), 1/9, (1)
L862 *Polyommatus icarus* (Common blue), 9/5 to 6/10, (14)
L710 *Eupithecia icterata* (Tawny speckled pug), 22/7 to 21/8, (6)
L776 *Scopula imitaria* (Small blood vein), 19/6 to 17/8, (10)
G1263 *Eulamprotes immaculatella*, 27/5, (1)
L121 *Epinotia immundana*, 29/4, & 18/7, (2)
L1304 *Scopula immutata* (Lesser cream wave), 11/7 to 2/8, (3)
L1080 *Hydriomena impluviata* (May highflyer), 11/5 to 24/7, (6)
L113 *Mythimna impura* (Smoky wainscot), 16/6 to 1/10, (14)
L350 *Orthosia incerta* (Clouded drab), 22/3 to 14/5, (14)
L91 *Cnephasia incertana* (Light grey tortrix), 18/5 to 13/8, (13)
L849 *Eupithecia innotata* (Ash pug), 1/7, (1)
G860 *Phtheochroa inopiana*, 22/6, (1)
G134 *Agriphila inquinatella*, 2/7 to 3/9, (7)
L1190 *Scrobipalpa instabilella*, 5/6, & 21/7 to 12/8, (5)
L13 *Noctua interjecta* (Least yellow underwing), 22/7 to 18/8, (8)
L1084 *Plodia interpunctella* (Indian meal moth), 1/9 to 12/9, (1)
L95 *Inachis io* (Peacock), 28/2 to 4/11, & 29/12, (14)
L151 *Agrotis ipsilon* (Dark sword grass), 5/6 to 1/11, (9)
L560 *Zeiraphera isertana*, 9/7 to 22/7, (2)
L414 *Platyptilia isodactylus*, 5/6 to 30/6, & 5/8 to 5/9, (5)
L46 *Tyria jacobaeae* (Cinnabar), 22/5 to 9/7, (10)
L9 *Noctua janthe* (Lesser broad bordered yellow underwing), 9/7 to 7/9, (14)
G1045 *Grapholita janthinana*, 28/7, (1)
G744 *Pseudatemelia josephinae*, 14/6 to 9/7, (4)
L276 *Autographa jota* (Plain golden Y), 17/6 to 1/8, (11)
G286 *Alcis jubata* (Dotted carpet), 9/7 to 30/7, (6)
G1016 *Grapholita jungiella*, 26/5 to 4/6, (1)
L134 *Maniola jurtina* (Meadow brown), 22/5 to 25/9, (14)
L74 *Agonopterix kaekeritziana*, 5/7, & 26/8 to 27/8, (3)
L327 *Leucoptera laburnella* (Laburnum leaf miner), 31/7 to 22/8, (1)

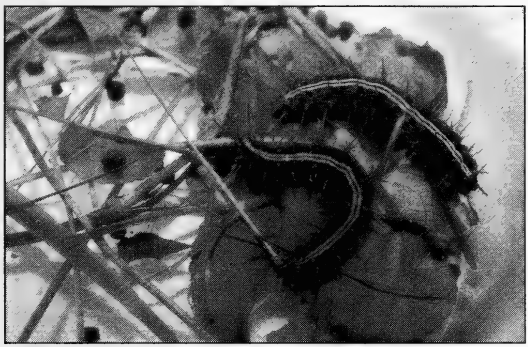
L931 *Falcaria lacertinaria* (Scalloped hook tip), 28/5 to 9/6, & 13/7, (3)
L250 *Jodis lactearia* (Little emerald), 7/6 to 25/7, (7)
G680 *Mompha lacteella*, 8/6, (1)
L25 *Celypha lacunana*, 5/5 to 17/9, (14)
L1239 *Dipleurina lacustrata*, 9/6 to 7/9, (14)
L1390 *Monopis laevigella* (Skin moth), 29/4 to 5/7, & 21/8 to 15/10, & 16/11, (12)
L773 *Mythimna l-album* (L-album wainscot), 16/6 to 18/7, & 29/8 to 18/10, (11)
G1060 *Batia lambdella*, 19/6 to 27/6, (1)
L1503 *Bactra lancealana*, 16/5 to 14/9, (12)
G204 *Perinephela lancealis*, 19/6 to 26/7, (10)
G739 *Eupithecia lariciata* (Larch pug), 27/5 to 10/6, (2)
L288 *Acleris laterana*, 13/7 to 11/11, (14)
L423 *Crambus lathoniellus*, 20/5 to 10/6, (6)
G303 *Agriphila latistria*, 1/8 to 6/9, (4)
L159 *Oligia latruncula* (Tawny marbled minor), 9/5 to 19/7, (12)
L355 *Phyllonorycter lautella*, 31/5, (1)
L47 *Ptycholoma lecheana*, 11/6 to 24/6, (2)
L682 *Acronicta leporina* (Miller), 17/6 to 21/7, (6)
G1350 *Caloptilia leucapennella*, 23/8, & 2/10, (2)
G1227 *Celaena leucostigma* (Crescent), 10/8, (1)
L129 *Scoliopteryx libatrix* (Herald), 1/4 to 2/9, (12)
L73 *Cleorodes lichenaria* (Brussels lace), 9/6 to 30/7, (13)
L309 *Polymixis lichenea* (Feathered ranunculus), 28/9 to 2/11, (10)
L1518 *Blastobasis lignea*, 20/7 to 3/9, (12)
L816 *Craniophora ligustri* (Coronet), 22/6 to 15/8, (13)
L190 *Sphinx ligustri* (Privet hawk), 6/6 to 21/7, (10)
L807 *Cyclophora linearia* (Clay triple lines), 28/4 to 21/7, (7)
G853 *Acleris literana*, 19/3 to 30/3, (2)
G266 *Mesologia literosa* (Rosy minor), 21/7 to 26/8, (9)
L479 *Oidaematophorus lithodactyla*, 17/6, (1)
L1188 *Apamea lithoxylea* (Light arches), 11/6 to 24/7, (8)
L817 *Mythimna litoralis* (Shore wainscot), 24/6 to 10/7, (3)
L382 *Lobesia littoralis*, 8/6 to 28/6, & 11/9, (6)
L1136 *Macaria liturata* (Tawny barred angle), 30/6 to 26/8, (7)
L1075 *Mythimna loreyi* (Cosmpolitan), 5/6, (1)
L87 *Agrochola lota* (Red line quaker), 25/9 to 2/12, (10)
L24 *Spilosoma lubricipeda* (White ermine), 3/5 to 19/7, (14)
L269 *Euplexia lucipara* (Small angle shades), 2/5 to 25/7, (14)
L69 *Marasmarcha lunaedactyla*, 21/6, & 23/7, (2)
L650 *Omphaloscelis lunosa* (Lunar underwing), 27/9 to 16/10, (7)
L800 *Selenia lunularia* (Lunar thorn), 12/5 to 16/6, (3)
G5 *Hepialus lupulinus* (Common swift), 20/5 to 1/7, (6)
L730 *Scotopteryx luridata* (July belle), 23/6 to 22/7, (5)
L630 *Eilema lurideola* (Common footman), 19/6 to 20/8, (14)
L275 *Coleophora lusciniaepennella*, 13/6 to 18/7, (3)
G1428 *Metriotes lutarea*, 17/5, (1)

G1026 *Hadena luteago* (Barrett's marbled coronet), 5/6 to 27/6, (1)
G498 *Udea lutealis*, 15/7 to 28/8, (12)
L318 *Opisthograptis luteolata* (Brimstone moth), 14/4 to 9/10, (14)
L225 *Spilosoma luteum* (Buff ermine), 11/5 to 19/7, (14)
L765 *Coleophora lutipennella*, 9/7 to 8/8, (5)
G381 *Rhizedra lutosa* (Large wainscot), 13/10, (1)
G1484 *Lampronia luzella*, 8/6, (1)
L615 *Agrochola lychnidis* (Beaded chestnut), 29/9 to 1/11, (5)
L794 *Agrochola macilenta* (Yellow line quaker), 1/1, & 20/10 to 30/11, (4)
L463 *Pseudopanthera macularia* (Speckled yellow), 10/5 to 25/6, (11)
G497 *Hysterophora maculosana*, 12/5, (1)
L81 *Phyllonorycter maestingella*, 14/4, & 15/5 to 7/6, & 11/9, (4)
G1382 *Yponomeuta malinellus* (Apple ermine), 2/8 to 4/8, (2)
L1025 *Pyrgus malvae* (Grizzled skipper), 24/5, (1)
L805 *Campaea margaritata* (Light emerald), 8/6 to 8/8, (13)
L510 *Endothenia marginana*, 24/7, (1)
L240 *Agriopis marginaria* (Dotted border), 17/1 to 27/4, & 20/11, (14)
L642 *Lomaspilis marginata* (Clouded border), 20/4 to 21/8, (14)
L298 *Emmetia marginea*, 20/5 to 22/8, (10)
L674 *Scopula marginepunctata* (Mullein wave), 28/5 to 20/9, (9)
G1151 *Chilodes maritimus* (Silky wainscot), 25/5, & 15/7, (2)
L1544 *Incurvaria masculella*, 22/4 to 27/5, (9)
L721 *Mormo maura* (Old lady), 11/7 to 20/8, (3)
G1029 *Coleophora mayrella*, 12/6 to 26/7, (7)
L389 *Acronicta megacephala*, (Poplar grey), 12/5, & 13/6 to 19/7, (6)
L690 *Lasiommata megera* (Wall), 30/4 to 30/10, (13)
L326 *Diaphora mendica* (Muslin moth), 27/4 to 4/6, (6)
L840 *Diarsia mendica* (Ingrailed clay), 18/5 to 8/8, (14)
L54 *Eudonia mercurella*, 24/5 to 15/9, (14)
L124 *Phyllonorycter messaniella*, 2/4, & 14/5 to 28/5, & 4/7 to 9/11, (12)
G804 *Nematopogon metaxella*, 31/5 to 4/7, (9)
L14 *Phlogophora meticulosa* (Angle shades), 22/2 to 1/12, (14)
L769 *Hydraecia micacea* (Rosy rustic), 13/7 to 16/10, (13)
G1053 *Argolamprotes micella*, 27/6 to 17/7, (3)
L38 *Adaina microdactyla*, 25/5, (1)
L583 *Miltochrista miniata* (Rosy footman), 17/6 to 25/8, (14)
G1222 *Photedes minima* (Small dotted buff), 14/7, (1)
L332 *Eulia ministrana*, 12/5 to 6/6, (8)
L500 *Lymantria monacha* (Black arches), 17/7 to 8/9, (13)
L186 *Emmelina monodactyla*, 16/2 to 6/5, & 27/6 to 11/11, (14)
L122 *Apamea monoglypha* (Dark arches), 20/5 to 7/9, (14)
L358 *Xanthorhoe montanata* (Silver ground carpet), 26/4 to 21/7, (14)
G252 *Scotopteryx mucronata* (Lead belle), 27/5 to 10/6, (2)
L507 *Mirificarma mulinella*, 29/7 to 1/9, (7)
L957 *Colostygia multistrigaria* (Mottled grey), 16/2 to 12/4, (10)
L141 *Orthosia munda* (Twin spotted quaker), 25/2 to 25/4, (14)

G183 *Cryphia muralis* (Marbled green), 16/6 to 11/9, (9)
L1197 *Synasphecia muscaeformis* (Thrift clearwing), 12/6, (1)
L16 *Syndemis musculana*, 18/4 to 30/6, (13)
L1220 *Rhopobota myrtillana*, 8/6, (1)
G580 *Anarta myrtilli* (Beautiful yellow underwing), 26/7, (1)
L62 *Rhopobota naevana* (Holly tortrix), 9/7 to 3/9, (11)
G1307 *Epinotia nanana*, 19/7, (1)
L857 *Eupithecia nanata* (Narrow winged pug), 31/5 to 11/8, (7)
L21 *Pieris napi* (Green veined white), 10/4 to 13/10, (14)
L154 *Euchoeca nebulata* (Dingy shell), 17/6 to 25/7, (9)
L843 *Polia nebulosa* (Grey arches), 14/6 to 25/7, (11)
L851 *Ypsolopha nemorella*, 7/7 to 14/8, (9)
L193 *Agonopterix nervosa*, 27/6 to 10/9, (14)
L80 *Malacosoma neustria* (Lackey), 27/8 to 9/8, (7)
L260 *Trichoplusia ni* (Ni moth), 2/8, (1)
L255 *Phyllonorycter nicellii*, 28/4 to 31/5, & 9/7, (4)
L90 *Aporophyla nigra* (Black rustic), 18/9 to 16/11, (10)
L603 *Cydia nigricana* (Pea moth), 4/6 to 1/7, (3)
L1087 *Epinotia nisella*, 9/7 to 16/9, (11)
L580 *Nomophila noctuella* (Rush veneer), 27/3 to 27/10, (13)
L101 *Acleris notana* 13/3 to 8/4, & 31/7 to 4/11, & 15/12 to 16/12, (2)
L383 *Hedya nubiferana* (Marbled orchard tortrix), 9/6 to 23/7, (8)
L885 *Elophila nymphaeata* (Brown china mark), 28/5 to 18/8, (9)
L930 *Euxoa obelisca* (Square spot dart), 9/8, (1)
L426 *Thera obeliscata* (Grey pine carpet), 29/4 to 15/8, & 2/10 to 13/10, (10)
G83 *Charissa obscurata* (Annulet), 21/7 to 17/8, (3)
L1123 *Perittia obscurepunctella*, 5/5 to 18/5, (2)
G1146 *Scrobipalpa obsoletella*, 5/6, (1)
L307 *Orthonama obstipata* (Gem), 8/5, & 8/6 to 13/6, & 19/7 to 22/8, & 9/10 to 19/10, (4)
L437 *Monopis obviella*, 25/6 to 28/6, & 29/11, (2)
L661 *Agonopterix ocellana*, 22/1 to 13/9, (12)
G1160 *Spilonota ocellana*, 8/7 to 9/8, (4)
L329 *Cosmorhoe ocellata* (Purple bar), 3/5 to 27/9, (14)
L39 *Smerinthus ocellata* (Eyed hawk), 12/5 to 8/7, (10)
L1146 *Scrobipalpa ocellatella*, 15/9, (1)
L637 *Hedya ochroleucana*, 3/7, (1)
L1485 *Tethea ocularis* (Figure of eighty), 25/5 to 24/6, (4)

L1485 *Tethea ocularis* (Figure of eighty)

G161 *Amphipoea oculea* (Ear moth), 28/7, (1)
L1221 *Incurvaria oehlmanniella*, 18/5 to 22/7, (5)
L32 *Lacanobia oleracea* (Bright line brown eye), 10/5 to 28/8, (14)
L35 *Udea olivalis*, 25/5 to 25/7, (13)
G222 *Lithophane ornitopus* (Grey shoulder knot), 30/3, & 4/11, (2)
G1274 *Eana osseana*, 21/7, (1)
G1275 *Coleophora otidipennella*, 14/5 to 12/6, (2)
G890 *Lampropteryx otregiata* (Devon carpet), 3/6 to 8/6, & 29/7 to 24/8, (6)
L226 *Allophyes oxyacanthae* (Green brindled crescent), 18/10 to 5/11, (9)
L215 *Phyllonorycter oxyacanthae*, 23/4, & 24/5 to 25/5, & 15/9, (3)
L553 *Yponomeuta padella* (Orchard ermine), 6/7 to 5/8, (8)
L1231 *Aphelia paleana*, 25/6, (1)
L723 *Mythimna pallens* (Common wainscot), 16/6 to 18/10, (7)
G912 *Eudonia pallida*, 18/8, (1)
L1228 *Platyptilia pallidactyla*, 4/6 to 24/7, (11)
L726 *Pterostoma palpina* (Pale prominent), 29/3 to 3/9, (14)
G203 *Pempelia palumbella*, 10/7, (1)
L861 *Coenonympha pamphilus* (Small heath), 13/5 to 11/9, (13)
L1444 *Argynnis paphia* (Silver washed fritillary), 12/7 to 21/8, (6)



L1444 *Argynnis paphia* (Silver washed fritillary), larvae on *Viola* (Violet).

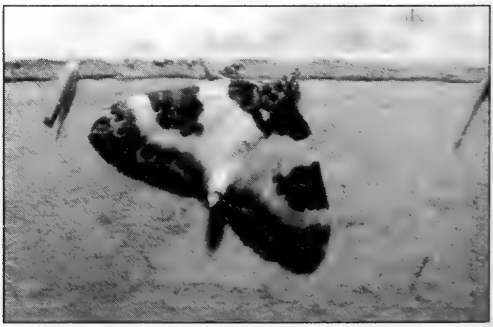
L607 *Geometra papilionaria* (Large emerald), 25/6 to 31/7, (14)
L611 *Ypsolopha parenthesella*, 8/7 to 20/9, & 20/10, (12)
L907 *Crambus pascuella*, 29/5 to 1/9, (14)
L105 *Depressaria pastinacella* (Parsnip moth), 25/7 to 18/6, (14)
L666 *Ptocheuusa paupella*, 1/7, & 10/8, (2)
L247 *Colostygia pectinataria* (Green carpet), 25/4 to 6/7, & 25/8 to 19/10, (14)
L845 *Incurvaria pectinea*, 24/4 to 5/5, (3)
L1174 *Heliothis peltigera* (Bordered straw), 8/6, (1)
L93 *Colotis pennaria* (Feathered thorn), 21/10 to 21/12, (14)
L59 *Pterophorus pentadactyla* (White plume), 17/6 to 26/7, (11)
L291 *Crambus perlella*, 17/6 to 2/8, (13)

L706 *Hadena perplexa* (Tawny shears), 11/4 to 23/4, & 24/5 to 9/8, (8)
L31 *Melanchra persicariae* (Dot moth), 4/6 to 6/8, (13)
L549 *Dichrorampha petiverella*, 4/6 to 26/7, (11)
L208 *Lycaena phlaeas* (Small copper), 5/5 to 20/10, (14)
G1521 *Scythris picaeformis*, 25/7, (1)
L691 *Catoptria pinella*, 19/6 to 18/8, (11)
G113 *Aglossa pinguinalis* (Large tabby), 19/7, (1)
L1523 *Bupalus piniaria* (Bordered white), 9/6, (1)
L119 *Melanchra pisi* (Broom moth), 20/5 to 4/7, (9)
L111 *Aplocera plagiata* (Treble bar), 24/5, & 11/8 to 3/9, (3)
G37 *Hada plebeja* (Shears), 26/5 to 12/6, (4)
G667 *Crocidosema plebejana*, 30/10, (1)
L340 *Ochlopleura plecta* (Flame shoulder), 23/4 to 27/9, (14)
L244 *Danaus plexippus* (Monarch), 19/5, & 25/9, (2)
L536 *Dichrorampha plumbana*, 12/5 to 18/6, & 20/7, (9)
G772 *Yponomeuta plumbella*, 4/8, (1)
G748 *Eupithecia plumbeolata* (Lead coloured pug), 25/6, (1)
L51 *Archips podana* (Large fruit tree tortrix), 4/6 to 25/7, (10)
L530 *Eulithis populata* (Northern spinach), 23/6 to 8/7, (4)
L596 *Anacampsis populella*, 10/7 to 4/9, (6)
L148 *Laothoe populi* (Poplar hawk), 29/4 to 31/7, (14)
L748 *Poecilocampa populi* (December moth), 24/11 to 18/1, (4)
L1040 *Deilephila porcellus* (Small elephant hawk), 16/6 to 13/7, (6)
L912 *Lycophotia porphyrea* (True lover's knot), 28/5 to 10/8, (13)
L102 *Epiphyas postvittana* (Light brown apple moth), 8/2 to 31/12, (14)
L71 *Euthrix potatoria* (Drinker), 17/6 to 24/8, (14)
L1011 *Batrachedra praeangustana*, 16/7, (1)
L1026 *Anaplectoides prasina* (Green arches), 28/5 to 25/7, (10)
L477 *Pseudoips prasinana* (Green silver lines), 23/5 to 25/7, (8)
L243 *Theria primaria* (Early moth), 25/1 to 8/4, (14)
L29 *Hypena proboscidalis* (Snout), 20/5 to 13/10, (14)
G224 *Melanthia procellata* (Pretty chalk carpet), 4/7 to 7/8, (6)
L571 *Eudemis profundana*, 22/7 to 25/7, (2)
L23 *Noctua pronuba* (Large yellow underwing), 6/3, & 31/5 to 13/10, (14)
L823 *Pseudoterpna pruinata* (Grass emerald), 9/6 to 4/9, (12)
L1397 *Udea prunalis*, 22/7, (1)
L316 *Angerona prunaria* (Orange moth), 8/6 to 13/7, (5)
L782 *Eulithis prunata* (Phoenix), 10/7 to 26/8, (14)
L30 *Hedya pruniana* (Plum tortrix), 26/5 to 26/7, (14)
L236 *Hofmannophila pseudospretella* (Brown house moth), 7/4 to 10/11, (14)
L160 *Acronicta psi* (Grey dagger), 12/5 to 29/8, (11)
L852 *Stenoptilia pterodactyla*, 21/6 to 29/7, (5)
L88 *Calliteara pudibunda* (Pale tussock), 28/4 to 13/7, (14)
L810 *Eupithecia pulchellata* (Foxglove pug), 25/4 to 25/8, (14)
G170 *Autographa pulchrina* (Beautiful golden Y), 25/5 to 29/7, (13)
L284 *Digitivalva pulicariae*, 21/4 to 25/5, & 18/7 to 9/8, (4)

L847 *Plagodis pulveraria* (Barred umber), 25/4 to 24/6, (11)
G754 *Dolicharthria punctalis*, 9/8, (1)
G916 *Amblyptilia punctidactyla*, 13/4, & 12/6 to 6/7, & 30/11, (5)
L1157 *Cyclophora puppillaria* (Blair's mocha), 22/6, (1)
G1123 *Clavigesta purdeyi*, 15/8 to 24/8, (3)
G752 *Pyrausta purpuralis*, 6/7 to 25/8, (1)
L268 *Cabera pusaria* (Common white wave), 6/5 to 6/9, (14)
L98 *Agrotis puta* (Shuttle shaped dart), 21/4 to 27/10, (14)
G810 *Mythimna putresens* (Devonshire wainscot), 5/7 to 12/8, (4)
L274 *Axylia putris* (Flame), 14/5 to 31/7, (14)
L1110 *Protodeltote pygarga* (Marbled white spot), 18/5 to 6/9, (14)
L44 *Argyresthia pygmaeella*, 11/6 to 11/7, (5)
L506 *Chortodes pygmina* (Small wainscot), 24/6, & 3/8 to 19/9, (6)
G251 *Scoparia pyralella*, 26/5 to 13/7, (13)
L1130 *Eulithis pyraliata* (Barred straw), 8/6 to 18/8, (13)
L612 *Amphipyra pyramidea* (Copper underwing), 10/8 to 4/10, (9)
L322 *Swammerdamia pyrella*, 19/5 to 30/5, & 17/7 to 24/8, (7)
L461 *Habrosyne pyritoides* (Buff arches), 11/6 to 9/8, & 29/9, (14)
G49 *Endothenia quadrimaculana*, 29/6 to 29/8, (6)
G1310 *Bohemannia quadrimaculella*, 25/7 to 28/7, (2)
L385 *Carcina quercana*, 4/7 to 3/9, & 18/10 to 25/10, (11)
L456 *Phyllonorycter quercifoliella*, 27/5 to 28/5, (2)
L1232 *Ennomos quercinaria* (August thorn), 30/7 to 4/9, (12)
L96 *Lasiocampa quercus* (Oak eggar), 25/7 to 27/8, (10)
L1008 *Neozephyrus quercus* (Purple hairstreak), 25/6 to 29/7, (6)
L735 *Epinotia ramella*, 25/8 to 29/9, (5)
L4 *Pieris rapae* (Small white), 10/4 to 14/10, (14)
L372 *Mompha raschkiella*, 16/6, (1)
L803 *Adela reaumurella*, 21/4 to 2/6, (10)
L929 *Pasiphila rectangulata* (Green pug), 31/5 to 24/8, (14)
L388 *Pammene regiana*, 9/7 to 31/7, (2)
L720 *Lobesia reliquana*, 28/5, (1)
L399 *Apamea remissa* (Dusky brocade), 9/6 to 14/7, (8)
L825 *Epione repandaria* (Bordered beauty), 6/7 to 3/9, (12)
L167 *Alcis repandata* (Mottled beauty), 12/5 to 25/7, (14)
G839 *Argyresthia retinella*, 19/6 to 25/7, (4)
G552 *Ipimorpha retusa* (Double kidney), 18/8, (1)
L1062 *Nycteola revayana* (Oak nycteoline), 4/5 to 8/5. & 19/7 to 17/9, (9)
L660 *Gonepteryx rhamni* (Brimstone), 11/3 to 30/10, (14)
G1198 *Pammene rhediella* (Fruitlet mining tortrix), 12/5, (1)
L100 *Acleris rhombana* (Rhomboid tortrix), 4/9 to 15/10, (8)
L742 *Peribatodes rhomboidaria* (Willow beauty), 2/6 to 17/9, (14)
L195 *Hypatima rhomboidella*, 28/7 to 16/9, (10)
L1257 *Deileptenia ribeata* (Satin beauty), 14/6 to 2/9, (9)
G883 *Polyploca ridens* (Frosted green), 21/4 to 5/5, (3)
L656 *Agrotis ripae* (Sand dart), 19/6 to 4/7, (2)

L811 *Epirrhoe rivata* (Wood carpet), 25/5 to 13/9, (12)
G1319 *Celypha rivulana*, 12/7 to 26/7, (3)
G209 *Hadena rivularis* (Campion), 8/6, (1)
L53 *Epiblema roborana* 25/7, (1)
G901 *Phycita roborella*, 4/7 to 24/8, (6)
L1076 *Caloptilia robustella*, 18/4 to 12/5, & 13/7, (3)
G1385 *Yponomeuta rorrella* (Willow ermine), 11/8, (1)
L181 *Epiblema rosaecolana*, 6/6 to 24/7, (13)
L1092 *Archips rosana* (Rose tortrix), 3/7 to 14/7, (2)
L1206 *Agonopterix rotundella*, 14/8, (1)
L1310 *Callophrys rubi* (Green hairstreak), 8/5 to 16/7, (5)
L262 *Diarsia rubi* (Small square spot), 10/5 to 30/9, (14)
L18 *Macrothylacia rubi* (Fox moth), 20/5 to 9/6, (3)
L540 *Catarhoe rubidata* (Ruddy carpet), 10/6 to 12/8, (9)
L1331 *Aethes rubigana*, 11/6 to 4/8, (10)
L1500 *Plemyria rubiginata* (Blue bordered carpet), 11/7 to 25/7, (4)

L1500 *Plemyria rubiginata* (Blue bordered carpet), larva on *Alnus* (Alder).



L1500 *Plemyria rubiginata* (Blue bordered carpet).

L953 *Conistra rubiginea* (Dotted chestnut), 27/3 to 28/3, (2)
G1260 *Epinotia rubiginosana*, 9/6, (1)
G169 *Atomis rubricollis* (Red necked footman), 19/7, (1)
L779 *Cerastis rubricosa* (Red chestnut), 24/2 to 18/5, (14)
G297 *Coenobia rufa* (Small rufous), 22/7 to 3/9, (6)
L82 *Helcystogramma rufescens*, 24/6 to 6/8. 1988, (12)
L439 *Stigmella ruficapitella*, 11/5, (1)
L360 *Drymonia ruficornis* (Lunar marbled brown), 15/4 to 23/5, (7)
L503 *Gymnoscelis rufifasciata* (Double striped pug), 12/1 to 18/10, (14)
L1443 *Adela rufimitrella*, 7/5 to 26/5, (2)
L894 *Caloptilia rufipennella*, 27/6, (1)
L1078 *Elachista rufocinerea*, 15/4 to 27/5, (12)
L48 *Acronicta rumicis* (Knot grass), 20/4 to 20/9, (13)
L1277 *Cochylidia rupicola*, 17/7 to 12/8, (4)
L79 *Pleuroptya ruralis* (Mother-of-pearl), 25/6 to 20/9, (14)
L1173 *Prays rustica*, 5/5, & 12/6, & 17/7, (3)
L1066 *Rhodometra sacraria* (Vestal), 6/8 to 30/8, & 19/10 to 31/10, (4)
G152 *Opostega salaciella*, 31/5, & 4/7, (2)
L118 *Phyllonorycter salicicolella*, 7/6, & 4/8 to 26/8, & 29/9, (5)
L317 *Ourapteryx sambucaria* (Swallowtailed moth), 20/6 to 13/8, (14)
L142 *Endrosis sarcitrella* (White shouldered house moth), throughout the year, (14)
L669 *Peridroma saucia* (Pearly underwing), 28/5 to 13/6, & 6/7 to 29/9, (7)
L1012 *Apotomis sauciana*, 30/6, (1)
L110 *Phycitodes saxicola*, 9/6 to 10/8, (6)
L1441 *Coleophora saxicolella*, 26/7 to 9/8, (2)
L308 *Acleris schalleriana*, 3/9, (1)
L1447 *Glyphipterix schoenicolella*, 27/5, & 15/7, (2)
L1041 *Olindia schumacherana*, 14/6 to 14/7, (3)
G468 *Nematopogon schwarziellus*, 3/5 to 15/6, (12)
L558 *Apamea scolopacina* (Slender brindle), 6/7 to 16/8, (13)
L526 *Epiblema scutulana*, 4/5 to 21/6, (5)
L205 *Mesapamea secalis* (Common rustic), 1/7 to 15/9, (14)
G1380 *Yponomeuta sedella*, 3/8, (1)
L895 *Agrotis segetum* (Turnip moth), 12/6 to 8/11, (11)
L1537 *Agriphila selasella*, 19/8, (1)
L1106 *Boloria selene* (Small pearl bordered fritillary), 27/5 to 5/8, (6)
G214 *Hipparchia semele* (Grayling), 9/7 to 20/8, (4)
G416 *Apotomis semifasciana*, 8/7 to 17/8, (4)
L1463 *Tinea semifulvella*, 16/5 to 4/10, (13)
G1388 *Argyresthia semitestacella*, 9/9, (1)
G1415 *Bryotropha senectella*, 20/7 to 12/8, (5)
G259 *Thumatha senex* (Round winged muslin), 2/7 to 15/7, (2)
L551 *Rivula sericealis* (Straw dot), 2/6 to 24/9, (13)
L1219 *Heliozela sericella*, 23/4 to 26/5, (4)
L281 *Coleophora serratella*, 7/7 to 26/7, (4)
L1295 *Pterapherapteryx sexalata* (Small seraphim), 14/5 to 19/7, (13)

L180 *Epinotia signatana*, 27/6 to 5/8, (7)
L103 *Ecliptopera silaceata* (Small phoenix), 21/4 to 15/9, (14)
L1083 *Parectropis similaria* (Brindled white spot), 31/5 to 8/7, (6)
L273 *Euproctis similis* (Yellow tail), 15/7 to 6/8, (2)
L537 *Glyphipterix simpliciella*, 1/5 to 24/6, (14)
L220 *Leptidea sinapis* (Wood white), 9/7, (1)
G745 *Homoeosoma sinuella*, 21/6 to 18/7, (3)
L1260 *Chloroclysta siterata* (Red green carpet), 4/5 to 11/5, & 13/10 to 8/12, (7)
G165 *Aphomia sociella* (Bee moth), 15/6 to 6/9, (12)
L631 *Epinotia solandriana*, 31/7, (1)
L228 *Bedellia somnulentella*, 13/9, (1)
L724 *Stigmella sorbi*, 9/7, (1)
G884 *Eilema sororcula* (Orange footman), 19/5 to 10/6, (7)
L1449 *Gelechia sororculella*, 18/7 to 8/8, (2)
L330 *Xanthorhoe spadicearia* (Red twin spot carpet), 14/4 to 17/9, (14)
L94 *Acleris sparsana*, 12/8 to 14/11, (13)
L980 *Anarsia spartiella*, 5/7 to 24/7, (6)
L173 *Clepsis spectrana* (Cyclamen tortrix), 12/8 to 19/8, (2)
L191 *Coleophora spinella* (Apple & plum case bearer), 4/7, (1)
G1383 *Pammene spiniana*, 5/8 to 26/8, (2)
L880 *Argyresthia spinosella*, 9/6 to 7/8, (13)
L610 *Cydia splendana*, 13/6 to 3/9, (13)
G755 *Nymphula stagnata* (Beautiful china mark), 6/7 to 18/7, (2)
L224 *Macroglossum stellatarum* (Humming bird hawk), 23/3, & 15/5 to 28/6, & 24/8, & 25/9 to 7/10, (8)
L61 *Cnephasia stephensiana* (Grey tortrix), 4/7, to 20/8, (11)
G1381 *Loxostege sticticalis*, 4/8, (1)
L231 *Caloptilia stigmatella*, 16/3 to 20/, & 11/5, & 19/6 to 3/8, & 19/10, & 19 11 to 12/12, (10)
L196 *Cochylimorpha straminea*, 12/6 to 5/7, & 19/8, (4)
L440 *Agriphila straminella*, 15/6 to 27/8, (14)
L695 *Biston strataria* (Oak beauty), 14/3 to 21/4, (7)
L824 *Celypha striana*, 12/6 to 1/9, (8)
L1442 *Coleophora striatipennella*, 9/6 to 22/7, (7)

L1442 *Coleophora striatipennella*, case on a seed-head of *Stellaria* (Stitchwort).

L177 *Lathronympha strigana*, 15/6 to 2/7, (3)
L1419 *Oligia strigilis* (Marbled minor), 10/5 to 19/7, (13)
G934 *Elachista subalbidella*, 29/5, (1)
L481 *Ectoedemia subbimaculella*, 24/6, (1)
L830 *Mompha subbistrigella*, 30/1 to 27/3, & 28/4 to 3/6, & 2/9 to 25/12, (12)
L841 *Scoparia subfusca*, 16/6 to 4/9, (14)
L152 *Eupithecia subfuscata* (Grey pug), 21/4 to 24/8, (14)
L325 *Epinotia subocellana*, 27/5 to 31/5, (2)
L960 *Eriocrania subpurpurella*, 21/4 to 9/5, (4)
L587 *Idaea subsericeata* (Satin wave), 5/5 to 30/6, & 27/8, (7)
L791 *Cydia succedana*, 7/4 to 21/10, (14)
L799 *Lampropteryx suffumata* (Water carpet), 27/3 to 12/6, (14)
L324 *Esperia sulphurella*, 3/4 to 10/6, (11)
G80 *Nematopogon swammerdamella*, 30/4 to 3/6, (7)
L545 *Abraxas sylvata* (Clouded magpie), 22/6 to 30/6, (1)
G216 *Hydrelia sylvata* (Waved carpet), 18/5 to 25/7, & 31/8, (12)
L1013 *Thymelicus sylvestris* (Small skipper), 23/6 to 27/8, (14)
L559 *Parthenos sylvia* (Clipper), 27/7, (1)
G761 *Hepialus sylvina* (Orange swift), 5/8 to 27/8, (3)
L1073 *Apeira syringaria* (Lilac beauty), 19/6 to 8/7, (5)
L12 *Caloptilia syringella*, 1/4 to 23/4, & 6/8, (3)
L1303 *Schrankia taenialis* (White line snout), 30/6 to 23/8, (8)
G790 *Coleophora taeniipennella*, 9/7, (1)
L527 *Erynnis tages* (Dingy skipper), 13/5 to 15/6, & 12/8, & 10/10, (8)
L1113 *Eupithecia tantillaria* (Dwarf pug), 21/4 to 9/6, (4)
L356 *Zanclognatha tarsipennalis* (Fan foot), 9/6 to 16/8, (14)
L609 *Ochsenheimeria taurella*, 27/8, (1)
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L171 *Discestra trifolii* (Nutmeg), 12/6, & 26/7 to 9/9, (5)
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L680 *Epiblema trimaculana*, 6/6 to 19/7, (6)
L27 *Aspilapteryx tringipennella*, 6/6 to 11/6, & 1/8 to 8/9, (5)
L1420 *Tinea trinotella*, 29/5 to 31/5, & 1/7 to 25/7, (4)
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L114 *Chloroclysta truncata* (Common marbled carpet), 12/4 to 10/11, (14)
L1491 *Eudonia truncicolella*, 20/6 to 24/8, (6)

L1491 *Eudonia truncicolella.*

L20 *Agrotis trux* (Crescent dart), 19/6 to 2/8, (5)
G469 *Micropterix tunbergella*, 24/4 to 6/6, (8)
G1114 *Apotomis turbidana*, 12/6 to 8/7, (3)
L1387 *Mythimna turca* (Double line), 2/7 to 4/7, (2)
L987 *Nonagria typhae* (Bulrush wainscot), 17/7, & 10/9, (2)
L184 *Epiblema uddmanniana* (Bramble shoot moth), 31/5 to 2/9, (14)
L452 *Phyllonorycter ulmifoliella*, 1/5 to 12/5, & 29/6 to 3/8, (5)
L1382 *Depressaria ultimella*, 25/3 to 11/5, & 19/9 to 29/9, (5)
L1059 *Agonopterix umbellana*, 3/2 to 2/3, & 27/7 to 24/8, (6)
L1284 *Cucullia umbratica* (Shark), 11/6 to 27/6, (5)
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L927 *Rheumaptera undulata* (Scallop shell), 30/6 to 28/7, (8)
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G1511 *Phyllocnistis unipunctella*, 14/9, (1)
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L739 *Ypsolopha ustella*, 29/1, & 2/3, & 4/8 to 13/10, (6)
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L1363 *Eupithecia venosata* (Netted pug), 13/5 to 25/5, (4)
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L1473 *Oligia versicolor* (Rufous minor), 14/6 to 7/8, (14)
G128 *Agrotis vestigialis* (Archer's dart), 19/6 to 18/7, (2)
L564 *Aphelia viburnana*, 1/7 to 16/7, (2)
L34 *Arctia villica* (Cream spot tiger), 18/5 to 25./6. 1990, (6)
G949 *Brachylomia viminalis* (Minor shoulder knot), 17/7 to 22/7, (2)
L334 *Cerura vinula* (Puss moth), 15/5 to 22/5, (3)
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L965 *Eupithecia virgaureata* (Golden rod pug), 24/4 to 22/8, (14)
L1042 *Tortrix viridana* (Green oak tortrix), 25/6 to 19/7, (5)
G845 *Phytometra viridaria* (Small purple barred), 27/7, (2)
G529 *Mythimna vitellina* (Delicate), 16/8 to 2/10, (2)
L716 *Palpita vitrealis*, 27/10, (1)
L856 *Orthonama vittata* (Oblique carpet), 28/5 to 23/6, & 18/8, (4)
L149 *Eupithecia vulgata* (Common pug), 21/4 to 7/7, (14)
L725 *Capua vulgana*, 5/5 to 2/7, (14)
G1476 *Teleiodes wagae*, 19/6, (1)
G1292 *Monopis weaverella*, 25/6, & 9/8, (2)
L647 *Strophedra weirana*, 20/5 to 5/8, (4)
L302 *Xestia xanthographa* (Square spot rustic), 11/7 to 19/10, (14)
L1093 *Archips xylosteana* (Variegated golden tortrix), 19/7 to 22/7, (3)
L203 *Plutella xylostella* (Diamond back), 12/4 to 2/11, (14)
G910 *Parastichtis ypsillon* (Dingy shears), 15/7 to 12/8, (3)
L125 *Notodonta ziczac* (Pebble prominent), 17/4 to 21/8, (13)
L370 *Agapeta zoegana*, 25/6 to 21/8, (11)
G909 *Stenoptilia zophodactylus*, 26/6, (1)

Book Review

The Moths and Butterflies of Great Britain and Ireland

Volume 4, in two hbk parts, published in 2002 by Harley Books, Great Horkesley, Colchester, Essex, each part being priced at £80 separately, or at £150 for both parts together, ISBN 0 946589 66 6 and ISBN 0 946589 6⁻ 4. There are 326 pages to Part 1, and 2⁻⁻ pages to Part 2.

The books are dedicated to the memory of A. Maitland Emmet, who died in 2001, aged 92, and whose meticulous investigations into the life-histories of the smaller Lepidoptera during the later years of his life have contributed enormously to our knowledge of these insects.

These two long-awaited books, together with vol. 3 which was published in 1996, are by far the most informative and praiseworthy of all the nine books in the MBGBI series which have appeared so far, and the various authors are to be congratulated on having produced such an excellent work, which will surely be a very valuable source of reference for lepidopterists, far into the future.

Until now there has been no readily obtainable, good, reliable identification guide to all the British Oecophoridae, Gelechiidae, and related smaller families, which are together currently placed in the superfamily Gelechoidea, and the vol. 4 books will fill a very much needed gap in current entomological literature. But these books are much more than merely an identification guide to the British Gelechoidea, a group which has been to some extent ignored by lepidopterists of the past due to the almost impossibility, in many instances, of obtaining reliable identifications for reared, bred, or wild-caught specimens, as they contain an enormous amount of previously unpublished information. These books will surely encourage many lepidopterists who, until now, have restricted their entomological interest to the so-called "macrolepidoptera", to widen and extend their interest to include some of the "micros".

Though the books in the MBGBI series are not yet complete, (vols. 5, 6, and 8 are not yet available), with the publication of the two vol. 4

books, it has at last become possible to identify, from good colour illustrations and text descriptions, the adult stage of almost all of the 2500 or so British Lepidoptera species by reference to readily available literature.

Volume 4, Part 1 begins with a personal tribute to Maitland Emmet, written by Basil Harley, and this is followed by an extremely interesting and well-researched chapter by J. Rydell and M. R. Young, which deals with the evolution of the predator/prey relationship between moths and bats, and includes some excellent colour photographs.

The Systematic Section, on page 42, follows that of the J. D. Bradley Checklist, 2000, with the exception of the removal of subfamily Blastodacninae, with only six British species, from Cosmopterigidae to Agonoxenidae, this being a not entirely unexpected change.

The 136 pages of main text which are devoted to the Oecophoridae are by M. W. Harper, J. R. Langmaid, and A. M. Emmet, and the family is divided here into four subfamilies. These pages begin with a checklist of the 80 or so British species in this family, and this is followed by very detailed diagrams, prepared by M. J. Roberts, of the genitalia of both sexes of all the species. The main text for each species follow the same general format as has been used in earlier volumes in the series, and includes *Description of imago*, *Similar species* (where appropriate), *Life History* notes on *Ovum*, *Larva*, *Pupa*, *Imago*, *Status* (where appropriate), and *Distribution*. There is a useful vice-county distribution map for each species. The next 117 pages deal in the same format, with the small families Ethmiidae by K. Sattler, Autostichidae (which was formerly included in Gelechiidae) by K. P. Bland, Blastobasidae by R. J. Dickson, followed by Batrachedridae, Agonoxenidae, Momphidae, and Cosmopterigidae, which are by J. C. Koster, and Scythrididae by B. A. Bengtsson.

The seven colour plates, reproduced from artwork by R. Lewington, illustrating the right half of a total of 210 moths, at enlargements from $\times 2$ to $\times 4$ are excellent, and these should enable most fresh specimens of the species covered by this volume to be identified to species level without dissection.

Volume 4, Part 2 deals with a single family, the Gelechiidae, of which, by current classification there are about 120 species on the British list. These are here split into six subfamilies, and the thirteen authors are K. P. Bland, M. F. V. Corley, A. M. Emmet, R. J. Heckford, P. Huemer, J. R. Langmaid, S. M. Palmer, M. S. Parsons, L. M. Pitkin, T. Rutten, K. Sattler, A. N. B. Simpson, and P. H. Sterling.

After a Checklist of the British and Irish Gelechiidae there is a Key to the genera, followed by detailed diagrams of the genitalia of both sexes. The main text is in the same excellent style as is used in Part 1, and occupies 184 pages. Six colour plates, illustrating the upperside right half of 192 moths and the left underside half of a further two, are to the same high standard as the illustrations in Part 1, and all of them are shown four times life size. The error on the legend to plate 2, where figs. 8 and 9 have been transposed, could only lead to misidentification, if the main text on pages 100 and 101, and the "Addenda and Correction" leaflet are ignored. A very minor criticism, which in no way detracts from the usefulness of this book, is that, though obvious when inspecting the colour plates, nos, 28 and 31 on plate 5 illustrate the undersides, or "verso", (this being necessary for identification by reference to wing-markings), but there is no mention of "verso" either in the legend to these two figs. on the unnumbered page 266, or in the main text referring to them on pages 209 and 211.

The vice-county distribution maps for each species can, of course, only include information available to the publishers before going to press, and it is a pity that for some reason the confirmed record of a single *Teleiodes wagae*, which turned up in 1999 in vice-county 2, far from the previously known distribution area for that species, was not included on the distribution map on page 134.

John L. Gregory

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This show is the first of its kind in Lincoln and tables are available at £10 each per 6ft, power is also available to limited amounts of these tables, If you do not require a table but would like to attend admission is £2 per adult and £1 for children under 16, children under 4 go free.
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If you have any questions please get in touch with either Myself or Heather on the methods below.

Many thanks,
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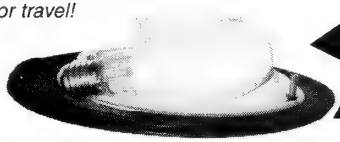

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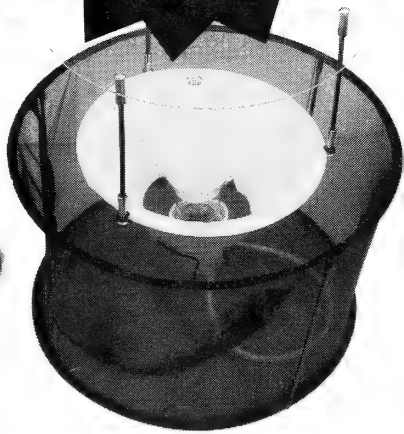

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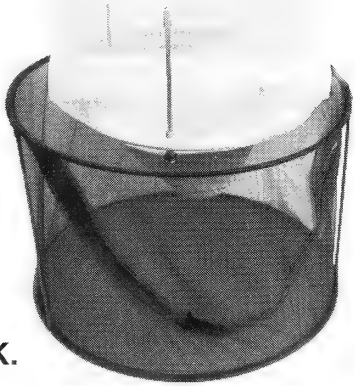

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New Auditor needed for the Society

Following many years of good service to the Society, our auditor for the last 20 years has decided to lessen his workload. Any member, who is qualified as an auditor, and who would be interested in becoming the next auditor for the Society, is asked to contact the Treasurer at the earliest opportunity. Thank you.

Registrar – new address

Nick and Susan Holford have now moved. Their new address is:
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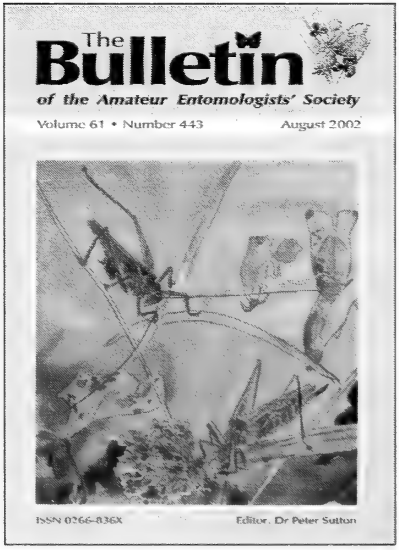

Illustration: John Walters

The *Bulletin* cover picture, which shows a pair of Great green bush-crickets, *Tettigonia viridissima*, comes from the evocative palette of Devon Wildlife artist, John Walters.

This magnificent species is the largest of our native Orthoptera, and also one of the largest European insects. It has a strict requirement for warm habitats, and is generally confined to coastal localities in southern England and Wales, although some large inland colonies do occur.

The Great green bush-cricket has a stronghold in the South Hams district of Devon, (the specimens shown were painted near Buckfastleigh), and this species can be heard singing in the wildlife-rich hedgerows of this area in late summer.

The Bulletin
of the Amateur Entomologists' Society

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Editorial

Let me explain what has happened here. This is a one issue only, temporary editorship! This whole issue had been reserved for a Special Orthoptera Edition, but this project became so successful that it will now be published by the AES as a book in its own right. So when our *Bulletin* Editor, Wayne Jarvis contacted me to say, "This Special Edition that you've reserved then, what's the story?", I thought I'd better get writing!
On my travels, I have been keen to gauge interest in the *Bulletin*, and have asked members what sort of articles they would like to see appearing in the *Bulletin*. The general consensus is that members would like to see articles that describe sites of entomological interest, with details of what they can find when they visit these sites. In accordance with this, the first in a series of articles describing "Classic Wildlife Sites" has been produced. (The second article in this series will describe the insects of the Braunton Burrows dune system in Devon, which will include species such as the Dark green fritillary, *Argynnis aglaja*, and the Dune tiger beetle, *Cicindela maritima*.)

I have tried to cater for a wide range of tastes with the articles that I have produced for this *Bulletin* and I hope that there is something for everybody to enjoy in this issue.

Peter Sutton

Gift Aid Declarations

Members may be aware that as of 6th April 2000, it has been possible for the Society to claim Gift Aid Relief on subscriptions and donations with respect to members who pay income tax in the UK. This provides a valuable source of income to the Society, and members who are UK tax payers, and who have not completed the Gift Aid declaration on either the renewal notice or the June 2001 Wants and Exchange list, are requested to do so at the earliest opportunity, and forward it to the Registrar. (A Gift Aid form can be obtained on request from the Treasurer at the usual address, enclosing a S.A.E.)

Lastly, can I take this opportunity to remind members who have filled in Gift Aid declarations, that they must contact the Society, in writing, if they cease to pay tax.

Peter May, Hon. Treasurer

Insects in Gardens

Dr Peter G. Sutton (7388)

AES Habitat Conservation Officer, 2 Fir Tree Close, Flitwick, Beds. MK45 1NZ.

In recent weeks, there has been some useful discussion on the subject of "gardening for invertebrates" by members of the AES forum (http: www.egroups.com aes). This discussion, together with the excellent article by Paul Talbot in a recent edition of the AES *Bulletin* (Talbot, 2001) struck a chord for two reasons. Firstly, it reminded me of my own efforts to create a wildlife garden when I was a boy, and secondly, the article by Paul Talbot correctly states that you don't need to be in possession of half an acre of prime land to create a wildlife friendly garden. The modifications that the author has made to his 12 × 15 foot back garden in West Yorkshire, pay testimony to the impressive number of species that can be attracted to a small garden when it is adapted for wildlife, and to date, the garden has attracted "12 butterfly species, 436 moth species and 46 bird species", and a number of mammals including "Pipistrelle bat, Fox, Hedgehog and Wood mice."

I recently wrote a similar article for the Devon Invertebrate Forum* (March 2002), which described my efforts to transform the concrete backyard of a town house in Plymouth into a wildlife friendly garden. The backyard was paved with concrete slabs, but the previous occupier had built a two-foot high brick border around the walls of the garden, which extended a foot or so from the wall, and which was filled with earth. It was from plants grown in this thin strip of soil surrounding the perimeter of the garden that most observations were made, and a number of unexpected visitors were observed. These included: the Leafcutter bee *Megachile maritima* and *Anthidium manicatum*; the red and black bug *Corizus hyoscyami*; the hoverfly *Volucella zonaria*; Hummingbird hawkmoth *Macroglossum stellatarum*; Jersey tiger moth *Euplagia quadripunctaria*; Lime hawkmoth *Mimas tiliae* (which arrived in a jam jar courtesy of an interested neighbour); and the most remarkable observation of all, the Convolvulus hawkmoth *Agrius convolvuli*, the discovery of which is described in the extract below. A number of Orthoptera (second extract) were also recorded.

From: Insect life in a Plymouth Garden

In an attempt to attract more insects into the garden, more flowers were planted, and in one section, a large amount of compost loaded with the seeds of "night-scented" flowers was spread liberally along the border.

* Details of the Devon Invertebrate Forum can be obtained from Peter Smithers, Department of Biological Sciences, Davy Building, University of Plymouth, Drakes Circus, Plymouth, Devon PL4 8AA.

A bed of *Nicotiana* was planted next to the garage wall, and more colourful *Primulas*, a favourite with Bumble bees (and which seemed to flower for most of the year) were used to fill in any remaining gaps.

During the summer months, the night-scented flowers became the pièce de résistance in the garden, and the long balmy evenings were enhanced by the fragrant and intoxicating scent which perfumed the air at dusk.

On one such evening, as I sat by the glowing coals of a late barbecue, I heard what could only be described as a throbbing hum, almost like that of a hover mower. As I turned towards the sound, I saw what I thought was a bat circling around the Buddleia bush. It flew over the wall and up towards the light of the lamp post in the cobbled alley behind the backyard, before disappearing from view. Moments later, it reappeared above the gate and swooped down towards the patch of *Nicotiana*, where it hovered in front of the purple and white flowers. It suddenly dawned on me that what I was observing was an incredibly large moth, like a gigantic Hummingbird hawkmoth, feeding on the nectar of the *Nicotiana* flowers. It was a Convolvulus hawkmoth *Agrius convolvuli*, a magnificent species with the largest (6") wingspan of any British moth. It was hard to believe that this moth had recently flown across Europe from Africa to feed from flowers at a city garden in Plymouth. It was an incredible sight, and it held its huge body motionless as it hovered, extending its proboscis (which was longer than the entire length of its body) into each flower head to drink the nectar.

As the summer months progressed, the small, parched squares of front lawn across the road played host to a number of Field grasshoppers *Chorthippus brunneus*. There were Dark bush-crickets *Pholidoptera griseoaptera* along the railway line, but these never appeared in any of the gardens along the street. However, Oak bush-crickets *Meconema thalassinum* and the Speckled bush-cricket *Leptophyes punctatissima* were regular visitors to the backyard, and the gardens and the avenue of pollarded Lime trees (which rose in defiance from the concrete and tarmac that surrounded them) presumably provided the "corridors" that they required for movement in the area.

As a boy, I grew up on a council estate in Crawley, West Sussex, which, like other concrete orientated developments such as Bracknell, was one of the post-war "new towns". Like Bracknell, the town was surrounded by countryside, and prior to the prolific extension of the estates, it still had a number of woods and fields within the town boundaries, where I spent much of my childhood exploring. I developed a keen interest in wildlife at an early age, and made regular

trips to the woods and the local millpond to search for creatures to put into my margarine tub. I was lucky enough to have parents who were fairly tolerant of my activities, although they were somewhat vexed (to put it mildly) when I tried to empty a bucket of Grass snakes I had collected into the garden pond. (I also recall my mother having an unbridled rant about my bedroom "looking and smelling like a zoo!", after a "Cabbage white incident". She walked into the bedroom just as my brother and I opened a margarine tub we had retrieved from under the bed, and which turned out to be the source of the un-Godly smell we had been blaming each other for, for over a week. This tub had formerly contained caterpillar infested cabbage, but now, several weeks later, contained a vile smelling green mush. Needless to say, we were all on the verge of passing out before we scrambled out of the room to safety.)

I made my first "pond" in the garden after a period of "hard labour", during which my friend and I did various jobs in order to get enough money to buy a washing up bowl each from the local hardware store. After filling the "ponds" with water, we went down to the millpond with our tubs to collect dragonfly larvae, water beetles, and other aquatic creatures. We soon learnt that the addition of pond weed greatly reduced the rate at which the various species would eat each other, and that the addition of small reeds would allow the dragonflies to hatch out without drowning. The dragonflies were always the Broad-bodied chaser *Libellula depressa* (which we called the Southern libellula, although I have not found a reference to this name in any literature). The larvae of this species were easily located in the mud at the shallow edge of the millpond, and a succession of blue males and yellow females were hatched from the tubs during the summer months. During this period, we discovered the most amazing and revered creature of all, the Water scorpion *Nepa cinerea*. Any person who found a Water scorpion achieved instant stardom (which could only otherwise be attained by discovering a box of "live" matches), and was immediately surrounded by a horde of onlookers, all jostling and shoving around a splashing jam jar to get a better look at the fearsome creature. I have vivid memories of my own search for this species, and after many weeks, I finally located a specimen as it clung to the side of an old, partially submerged car tyre that I lifted at the edge of the millpond. Awestruck, I managed to blurt out that I had found it, and at that point, my friend, Martin Wood, (a scruffy looking character from the newly built Bewbush estate, who had accompanied me tirelessly throughout the quest), began dancing wildly on the bank, shouting,

"You've hit the jackpot!" I can well remember the sheer elation of that moment, and on the way home, we clubbed together and bought a portion of chips to celebrate.

Not long after that, and whilst continuing the tradition of transporting wildlife back to our gardens, my school friends and I made another extraordinary discovery. At the edge of a woodland known as "Buckswood", which was progressively disappearing as the new estates were being built, we found two woodland ponds, which were squeezed between the edge of our estate and a complex of new flats that had been built to accommodate the older generation. These were known as the "Grannies ponds".

One pond was ephemeral and used to dry up every summer, but while it lasted, its warm shallow waters provided a plentiful supply of Palmate and Smooth newts, water beetles, and Great diving beetle *Dytiscus marginalis* larvae. (Great diving beetle larvae were a great favourite among those of us that kept them, and some of the massive specimens that were produced inspired such memorable comments as, "my one's burstin' at the seams mate!" After watching these larvae consume unnatural amounts of tadpoles in a very short space of time, each household usually ended up with one excessively large and immobile individual, which promptly expired, producing the final, and inevitably downhearted response of, "my one's just snuffed it.")

The other was a small round pond, deep and murky, and heavily shaded by large Oak trees and *Rhododendrons*. It was this latter pond, which kept its water throughout the year, that was extraordinary, and to this day, I have not encountered one similar. For some reason, this dark shaded pond, seemed to retain tadpoles for most of the year, and since there were always *Daphnia*, algae and other food present, I can only speculate that their growth was somehow retarded by the light deficient conditions, or the mass of decomposing leaf litter at the bottom of the pond. Either way, the "magical" properties of this pond meant that long after the tiny frogs and toads at the millpond has begun their terrestrial existence, tadpoles with no hint of a limb could still be collected from the top Grannies pond. This pond also, unsurprisingly, became a fabled site for those wishing to catch Great diving beetles.

Both of the ponds provided much of the aquatic life that we took back to our gardens (where our washing-up bowls had been now replaced by larger ponds and tanks), and we made regular visits to stock up with tadpoles, *Daphnia* and other "water fleas", and Water hog louse *Asellus aquaticus*, a crustacean which was present in

abundance. Every so often we would catch a Great diving beetle, or another finely marked water beetle such as *Acilius sulcatus*. And every so often, an old war veteran who lived in the flats, and who terrorised all-comers with a large notched stick, would catch us. (We firmly believed that the notches on his stick represented a string of "victims", and in all probability, dated back to a time when the public-spirited act of administering a "round thrashing" to a young delinquent, would merit a hand-written letter of apology from the recipient, and a warm handshake and glass of sherry from appreciative parents.)

By this time I had already developed a strong interest in grasshoppers and crickets, and it was by the top shaded pond, that I encountered my first Oak bush-cricket, *Meconema thalassinum*. The specimen was discovered by Tommy Mitchell, a friend of my brothers, who was known more for his interest in goal-hanging than any sort of interest in the natural world. (In one match, he was seen leisurely consuming the contents of his pack-lunch as he loitered about in the opposing teams' six-yard box.) As we poked around in the pond with our home-made nets, Tommy's dulcet cockney tones echoed across the estate: "Blimey, the aphids are big 'rand 'ere 'int they??!!"

And so our gardens continued to flourish, with colonies of insects, amphibians, and reptiles being added as and when they were found on our travels. (I'm sure that children who continue this tradition today are almost certainly unaware of the laws that disallow the capture and translocation of certain species, but they are, nevertheless, the next generation of enthusiasts and conservationists.)

We began to extend our interest to other "pets", and so began the period when any young boy worth his salt owned a stick insect in a big sweet jar. What we didn't know, was that these privet eating insects (which were the Indian stick insect, *Carausius morosus*) were egg laying machines, and after the initial elation of the first "hatch", things began to get out of hand on a grand scale. Even those children who talked their parents into providing larger accommodation for their growing horde of stick insects found it difficult to cope, not least because many of them were "collared" for leaving large holes in their neighbours' privet hedges. Even for my brothers and me, who used to collect privet from a municipal garden, it all got too much, and in the irresponsibility of youth, we let our whole collection loose on a neighbour's hedge. Within a few weeks, he was scratching his head and saying to my father, "I don't know what's going on with my hedge Dave... its just disappearing. And I keep finding these funny little seeds on the pavement." My friend's collection, which "broke out" on regular

occasions, suffered an infinitely worse fate at the hands of his father, who, having reached the end of his tether as screaming guests vacated a family dinner party, resolved the matter once and for all in grisly fashion with a series of consecutive flushes.

As I grew older, I took much pleasure from the fact that my parent's garden, although small, had become a hive of activity. We looked forward to the first call of the frogs in the pond in spring, the first dragonflies of summer, and the chirping of bush-crickets in the autumn, not to mention the Bullfinches feeding on berries in winter, and the Slow worms that appeared every so often in the compost heap. The garden was a source of enjoyment, and I remember one sunny morning, when my mother and I sat on the patio with cups of coffee, watching the butterflies dancing above the ice-plants, she said, "Isn't it peaceful?" And it was. You could hear the loud thrust of planes taking off from Gatwick every five minutes, and you could hear the constant rumble of London-bound traffic on the A23 nearby... but in our town garden, where fat Wood pigeons waddled in the dew-filled grass of early morning, and where Red admirals and Peacocks drank from the nectar-rich flowers in summer, we had created a peaceful place, where we could relax and enjoy the nature that surrounded us.

These days, people can create "wildlife friendly gardens" in a more informed manner, and in recent years, a number of books have been published on the subject of "Gardening for Wildlife". Among the best of these are *How to make a Wildlife Garden* by Chris Baines (2000), and Chris Packham's *Back Garden Nature Reserve* (2001), although from an invertebrate point of view, those looking for habitat creation with corresponding lists of potential species assemblages may be disappointed. Nevertheless, progress is being made, and with the increasing importance of gardens as wildlife refuges (*e.g.* "London has an estimated 150,000 ponds, a far higher pond concentration these days than the surrounding countryside, and it also has an impressive amphibian population to match", Urbio, 2002), things are moving in the right direction.

There is even a range of accessories for the wildlife garden, which include such wonders as: the Overground Bumble-bee Box; Bat Box; Lacewing Box; Hedgehog Dome; Clay and Reed Insect Box; House Martin Nests; Hardwood Insect Box; and my favourites, the Predator-Proof Tit Box and the Wildlife Paving Stone. (I always imagine the eyes of a Del-Boy type character lighting up when this latter item is requested, and how they differ from ordinary paving stones I have yet to find out, but they do have their uses. There are a number of

invertebrates that are likely to take up residence beneath the slab, and in the Lee Valley in Hertfordshire, a large area has been "planted" with paving stones in an attempt to find evidence of Mole cricket activity.)

In conclusion, there is much scope for a book on "Gardening for Invertebrates". In addition to the usual sections which concentrate on pond life and butterflies that can be attracted to gardens, it would be refreshing to have information on the creation of beetle banks, artificial "cliffs" for Hymenoptera, a more extensive treatise on the creation of deadwood habitats, and ideas for the creation of a variety of other habitats which will attract invertebrates. As mentioned above, a list of potential species assemblages associated with each habitat type would also be very useful. I am sure that if I had encountered such a book in our town library as a boy, it would have been put to good use!

References

Baines, C. (2000). *How to make a Wildlife Garden*, Frances Lincoln Ltd., London.

Packham, C. (2001). *Chris Packham's Back Garden Nature Reserve*, New Holland Publishers (UK) Ltd., London.

Sutton, P. G. (2002). Insect life in a Plymouth Garden, *Bulletin of the Devon Invertebrate Forum.*, **8**, pp. 2-7.

Talbot, P. (2001). The Wildlife Friendly Garden, *Bull. Amat. Ent. Soc.*, **60**, (No.439), pp. 238-243.

Urbio, Urban Biodiversity and Human Nature (Published by English Nature three times a year), (2002), Issue 1, pp. 12-13.

Prospects for the Silver-studded blue *Plebejus argus* (Linnaeus) in Britain: a case study in habitat conservation and management

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Introduction

The Silver-studded blue, *Plebejus argus*, (Plates 02AB/AC/AD/AE) has experienced a dramatic period of decline in the UK in recent years. The causes of this decline are discussed below, together with the conservation measures that are being used in an attempt to reverse this decline. The Silver-studded blue is prone to rapid local extinction when

conditions become unsuitable, especially where populations have become fragmented or isolated. A programme of active habitat management is required to ensure the long-term survival of this species in the UK.

Status and distribution

When *The Complete Book of British Butterflies* by F.W. Frohawk was published in 1934, the Silver-studded blue was described as a locally abundant butterfly which could be found on heaths and moorlands. At that time, it was still present on the chalk downs of southern England, and in addition to the southern heathland populations, the following distribution was given: "In Norfolk and Suffolk it is abundant on the heaths; it is also found in Cheshire, Durham, Herefordshire, Lancashire, Lincolnshire, Warwickshire and Yorkshire. In Gloucestershire and Somersetshire, it is apparently scarce. It is distributed in Scotland as far north as Perthshire." (Interestingly, no mention is made of the colonies on limestone grassland in Wales, or the sand dunes of Cornwall.)

Since Frohawk's time, things have changed considerably. The original range of the Silver-studded blue has contracted by 80% according to the Species Action Plan (Ravenscroft and Warren, 1996), and an estimate by Asher *et al* (2001), suggests a decline of 71% at a 10 km square level, since 1800. During this decline, which became increasingly rapid from the 1950s onwards, the Silver-studded blue has been lost from the chalk downs of southern England; Scotland; northern England; and the Midlands (with the exception of a single colony, which is sandwiched between two trunk roads (Thomas and Lewington, 1991)). There have also been considerable losses in parts of Wales; and in the Brecklands of Norfolk and Suffolk, where less than a dozen colonies now survive. Even some of the southern strongholds have been affected, with few colonies remaining in counties such as Devon and Berkshire. At the present time, it would appear that only on the heathlands of Dorset, the New Forest, and west Surrey, can the Silver-studded blue still be expected with certainty.

Although this species can be locally abundant in its southern heathland strongholds, the Silver-studded blue is a nationally scarce species whose continuing decline gives cause for concern. Accordingly, it is a UK BAP Priority Species, which has been afforded **medium** priority status. This status will ensure that efforts are made to protect and increase the number of Silver-studded blue colonies in the UK. This species is also protected under the Wildlife and Countryside Act 1981 with respect to trade.

A current UK distribution map for this species is given in Asher *et al.*, (2001).

Regional forms and habitat preferences

The Silver-studded blue exists in four regional forms in the UK, and each form is associated with a specific habitat. These regional forms, or "races", were at one time considered to be subspecies, uniquely adapted to these habitats. However, a study by Chris Thomas (1983) showed that *P. a. caernensis* (limestone grassland) and *P. a. argus* (heathland) used identical types of breeding site within their respective habitats, and would lay eggs in each others habitats. This, and subsequent observations, were thought to indicate that each form did not merit true subspecies status. However, some authors *e.g.* Ravenscroft and Warren (1996) still use the subspecies notation, and the genetics of these forms are currently being investigated (*ibid.*). What *can* be said, is that these phenotypically (visually) distinct forms do represent important harbours of genetic diversity within this species.

Plebejus argus argus, (Plates 02AB AC) is the typical form of the Silver-studded blue in the UK, and is associated with heathland and sand dune systems. It is this form that is still locally abundant on some southern heathlands.

Plebejus argus cretaceus (Plates 02AD AE) is slightly larger than *P. a. argus*, and the male of this form is a brighter blue than the nominate form. This species was formerly present on chalk downland in southern England, but is now confined to limestone quarries on the Isle of Portland in Dorset. Serious concern was raised when the Portland populations of this unique race came under considerable pressure from increased quarrying (SAP, *loc. cit.*), but the creation of an SSSI, and the purchase of two quarries by Butterfly Conservation, has provided some stability for these remaining colonies.

Plebejus argus caernensis is the smallest form of this species. The females are noticeably bluish (between those of *argus* and *masseyi*), and this form emerges earlier (by two to three weeks) than other UK populations. This form is found only in north Wales, where it is present on limestone grassland at Great Ormes Head, and as a successful introduction on the limestone grasslands of the Dulas Valley. (It should be noted that the original *caernensis* population introduced to the Dulas Valley has become almost as large as *P. a. argus*, which it now resembles (Heath *et al.*, 1984), adding credence to the belief that these forms should not be considered as subspecies.)

Plebejus argus masseyi was the typical form found on the mosses (a wet peatland habitat which includes "mossy" wet heath) of northern England. The females of this species are exceptionally blue. It was considered to be extinct by Emmet and Heath (1990), but is apparently still recorded from a single moss site in Wales (Species Action Plan, 1996), although this colony (which is now the northernmost colony on wet peatland), may have had a different evolutionary origin (Robertson, 1999). The extinct Scottish colonies were probably *P. a. masseyi.*

Excellent illustrations of all regional forms are provided in Thomas and Lewington (1991).

Reasons for decline

The reasons for the spectacular decline of the Silver-studded blue in Britain are uncomplicated. It is primarily a heathland species, and its decline has mirrored both the considerable loss of heathland in Britain over the last two centuries (over 80% since 1800; Habitat Action Plan for lowland heathland, 1998), and the decline in the suitability of remaining heathland habitats, as traditional management practices have been abandoned. The primary causes of heathland destruction have been attributed to the intensification of agriculture, forestry plantation, housing development, and industrial development (Emmet and Heath, 1990).

Silver-studded blue populations, which were once locally abundant on the mosses of Cumbria, were lost when these habitats were drained (Heath *et al.*, 1984).

Downland populations, (and probably many other populations) were lost when rabbits succumbed to the viral disease, myxomatosis.

Populations on other calcareous grassland sites have been lost to quarrying and agricultural improvement, and populations on many sites have been lost through scrub invasion and over-maturation of sites, resulting from loss of grazing and other (traditional) forms of management.

The importance of heathland

Southern heathlands hold the majority of Silver-studded blue colonies in the UK. This heathland is usually part of a complex system of habitats, consisting of bare ground, dry heath, humid heath, wet heath, grass heath, tussock heath, acid grassland, scrub, and mire habitats such as valley mire. The constituents of this complex mosaic, and their

typical characteristics (soil type, plant species *etc.*) are described by Tubbs (2001). The Silver-studded blue is present within the heathland part of this mosaic (dominated by ericaceous shrubs), and requires a warm microclimate, which includes areas of bare ground; pioneer heathland where a range of young heathland plants (especially Bell heather *Erica cinerea*) are present; and the presence of the ant species, *Lasius niger* or *Lasius alienus*, at densities that will ensure the satisfactory attendance of larval, pupal, and (emerging) adult stages. A detailed account of the exacting habitat requirements of this species is given by Joy (Heathland management for the Silver-studded blue butterfly, 1995).

On a larger scale, heathland in the UK is not just a habitat of vital importance for the Silver-studded blue, it is also a habitat of international importance. Heathland is one of the most severely threatened habitats in Europe, and the remaining 58,000 hectares of UK heathland, (55% of which is found in England), represents 20% of the remaining heathland in Europe (HAP, *loc.cit.*). In the UK, it is a habitat of exceptional importance, and supports more Priority species than any other habitat. These Priority species include the Nightjar, Woodlark and Dartford warbler (all listed under Annex 1 of the European Birds Directive), Smooth snake and Sand lizard (which are both the subject of English Nature Species Recovery Programmes), and a long list of rare invertebrates, including the Heath tiger beetle *Cicindela sylvatica*, the Bee fly *Thyridanthrax fenestratus*, and the Ladybird spider *Eresus niger*.

If a further decline in the fortunes of these species is to be prevented, a complex, habitat based approach to conservation is required, to ensure that all habitat types within the heathland mosaic are represented at various stages of development. This will attempt to ensure that the requirements of an optimum number of Priority species are being catered for in any heathland management plan.

The influence of Rabbits *Oryctolagus cuniculus*

The Rabbit, *Oryctolagus cuniculus*, is an introduced species that has played a pivotal role in shaping the biodiversity of many UK habitats. This species, which was historically distributed in Iberia, north-west Africa, and southern France (Morrison, 1994), was almost certainly introduced by the Normans in the 12th century... a date which coincides with the oldest known remains for this species in Britain. (There is evidence of Roman importation of Rabbits to Britain, and Marcus Terrentius Varro, in his *Rerum Rusticarum* (54 B.C.), confirmed that Rabbits had been brought to Britain from Spain; but the absence of

an Anglo-Saxon or Celtic word for Rabbit, and its omission from the Domesday Book (1086), strongly suggests that this species was not an established resident before the 12th century (Levy, 1977).)

For the downland populations of the Silver-studded blue in southern England, the onset of myxomatosis in the early 1950s was nothing short of a catastrophe, and the rapid disappearance of Rabbits was quickly followed by the extinction of colonies (*Plebejus argus cretaceus*) that existed on chalk grassland in Kent, Surrey, Hampshire and Dorset.

The role of the Rabbit in the dramatic loss of downland populations of species such as the Silver-studded blue, Adonis blue *Lysandra bellargus*, Silver-spotted skipper *Hesperia comma* and Chalkhill blue *Lysandra coridon*, is clear to see, but what is less well-known, is that Rabbits are also responsible for keeping heathland habitats "open". The activities of Rabbits can ensure a constant supply of the bare-ground and pioneer phase habitats, which are essential for so many of our rarer heathland species. Indeed, Kirby, in his *Habitat Management for Invertebrates: A Practical Handbook* (2001), makes the point that: "Any Rabbit population on a heathland site should be encouraged."

For the Silver-studded blue in Britain, the Rabbit still plays an important part in the management of many sites.

The relationship with ants

The Silver-studded blue has evolved a highly specialised relationship with two species of ant; *Lasius niger* and *Lasius alienus*. *Lasius niger* (which commonly nests in bare patches of warm soil) and *Lasius alienus* (which can nest in more shaded "pioneer" habitats) are the "host" species on heathland. In calcareous habitats, *Lasius alienus* is almost exclusively the host species (Asher *et.al*, 2001).

There is clear evidence that adult female butterflies respond to the presence of ant pheromones, and lay their eggs in the vicinity of ant nests. The larvae are closely tended by ants, and produce droplets of sugar-rich liquid which are consumed by the ants. In return for these secretions, the ant provides protection from predators and parasites. So copious is the production of this secretion, that in the absence of ants, the caterpillars often become mouldy and die (Thomas and Lewington, 1991). Ants are involved in all stages of the life-cycle of the Silver-studded blue, and the complex interplay between each party in this mutually beneficial arrangement has been studied in detail. (References to these studies are listed in the Species Action Plan, 1996.)

The dependence of the Silver-studded blue on ants means that any conservation strategy for this species must take into account the habitat requirements of the ant species *Lasius niger* and *Lasius alienus* in each respective habitat.

Habitat fragmentation and parasitism

In the *New Atlas of Dorset Butterflies* (Thomas *et al.*, 1998), it is stated that: "Some Portland, and probably heathland, populations are parasitised by a large and beautiful species of Hymenopteran wasp, thought to be specific to this one species of Blue." Since then, this wasp, the ichneumon, *Anisobas cingulatorius*, has also been recorded as a parasite of Brown argus, *Aricia agestis*, populations in north Wales. The Silver-studded blue is also parasitised by a similar species, *Virgichneumon tergenus*, and both species appear to be specific to Lycaenids (C. Thomas, *pers. comm.*, 08/02/00).

Hymenopteran parasitism is known to account for dramatic declines and local extinctions in some species of butterfly, such as the Marsh fritillary *Euphydryas* (*Eurodryas*) *aurinia* and the (Lycaenid) Holly blue *Celastrina argiolus*.

No mention is made in any literature, of the possible effects of parasitism, which could be responsible for the premature demise of Silver-studded blue populations which have become fragmented and isolated. However, since parasitoids do not appear to have a major effect on population densities (and in the absence of an appropriate study), it is probable that the effects of parasitism will not play a major role in the event of a decline in these populations.

Conservation of the Silver-studded blue

It is clear that the long-term survival of the Silver-studded blue in the UK is dependent on a well-structured programme of active habitat management, and that the primary objectives of any conservation strategy must be to halt both the physical loss of suitable habitat, and the deterioration of habitat that still exists. In some cases, particularly in more northerly populations (which are far less tolerant of changes which increase shading and reduce soil temperature), this will involve the use of intense management practice (*e.g.* Robertson, 1999), and may also require considerable resources.

Other populations, such as those on limestone grassland in Wales, are more easily managed, and can often be maintained by suitable grazing regimes.

Many populations of Silver-studded blue are protected on SSSI's, LNR's, NNR's, RSPB reserves, Butterfly Conservation reserves, and on National Trust land, but their future is not guaranteed in the absence of sound conservation management. A résumé of "Conservation to Date", which includes details of protected sites, recommended management practices, and also details of introductions in Wales, Suffolk and the Wirral, is given in the Species Action Plan (1996).

A major boost for the prospects of the Silver-studded blue has been the recent drive to reverse the decline of heathland habitats in the UK. The "Tomorrow's Heathland Heritage" project, (a £25-million plus, ten year programme) is the most notable initiative. This programme is making a huge contribution to ensuring that targets for heathland restoration in England and Wales (as set out in the National Lowland Heathland Biodiversity Action Plan), are met (English Nature, 2000). Also, projects such as the restoration of Dorset heathland (which accounts for 11% of the remaining lowland heathland in western Europe), which is co-ordinated by English Nature, has enlisted the co-operation of an impressive number of partners, which does much to increase awareness of this conservation issue. In this case, EN partners include the RSPB, Forest Enterprise, the Ministry of Defence, local councils and wildlife trusts, and a number of others, including Holton Lee, a charity for the disabled (English Nature, 2001).

It is clear that a substantial amount of work is being done to conserve the Silver-studded blue in its remaining habitats. The habitat-based approach that is being used to manage many of these sites, will also benefit a significant proportion of other Priority species in the UK.

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References

Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G. and Jeffcoate, S. *The Millenium Atlas of Butterflies in Britain and Ireland*, Oxford University Press, Oxford.

East Sussex County Council. (1998). *Habitat Action Plan for Sussex: Lowland Heathland.*

Emmet, A. M. and Heath, J. (ed.) (1990). *The Moths and Butterflies of Great Britain and Ireland, 7, part 1, Hesperiidae-Nymphalidae, the butterflies*, Harley Books, Colchester.

English Nature Magazine, (2000), No.52, pp.5-7.

English Nature Magazine, (2001), No.54, pp.6-7.

Frohawk, F. W. (1934). *The Complete Book of British Butterflies*. Ward, Lock & Co. Ltd., London.

Heath, J., Pollard, E. and Thomas, J. A. (1984). *Atlas of Butterflies in Britain and Ireland*. Viking, Harmondsworth.

Joy, J. (1995). *Heathland Management for the Silver-studded Blue Butterfly*. English Nature, Peterborough.

Kirby, P. (2001). *Habitat Management for Invertebrates: A Practical Handbook*. RSPB, The Lodge, Sandy, Beds. SG19 2DL.

Lever, C. (19--). *The Naturalised Animals of the British Isles*. Hutchinson & Co., London.

Morrison, P. (1994). *Mammals, Reptiles and Amphibians of Britain and Europe*. Macmillan, London.

Ravenscroft, N. O. M. and Warren, M. S. (1996). *Species Action Plan: Silver-studded Blue Plebejus argus*. Butterfly Conservation, Wareham.

Robertson, J. (1999). Snowdonia's Silver-studded Blues. *British Wildlife*. **11**, (No.2), pp.93-99.

Thomas, C.D. (1983). The ecology and status of *Plebejus argus* L. in north-west Britain. Unpublished M.Sc. thesis, University of Wales, Bangor.

Thomas, J. and Lewington, R. (1991). *The Butterflies of Britain and Ireland*. Dorling Kindersley, London.

Thomas, J., Surry, R. Shreeves, B. and Steele, C. (1998). *New Atlas of Dorset Butterflies*. Dorset Natural History and Archaeological Society, Dorchester.

Tubbs, C. R. (2001). *The New Forest History, Ecology and Conservation*. New Forest Ninth Centenary Trust, Lyndhurst.

Classic Wildlife Sites: Goring District, Oxfordshire

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Introduction

The Goring district in Oxfordshire is situated on the River Thames to the north-west of Reading. This region, where the Thames cuts through the chalk downs of Berkshire and Oxfordshire (along the boundary of the two counties), is known as the Goring Gap, and is well known for some of its entomological specialities. This article describes the insect fauna that has been recorded to the south-east of Goring (which includes the Hartslock Reserve), within the area enclosed by the B4526 and B471, and the River Thames.

Insect Recording in the Goring district

The county of Oxfordshire has a long tradition of natural history societies, and the significant contribution that these societies have made to the knowledge of its flora and fauna, has made Oxfordshire one of the most well-recorded counties in the UK. The entomological

fauna of Oxfordshire (and the other Thames counties of Berkshire and Buckinghamshire), has been particularly well documented, and much of this information, which includes a substantial number of records and specimens, can be found in the Hope Entomological Collections in the University Museum at Oxford. These collections have proved to be invaluable in assessing the changes that have occurred in the entomological fauna of the Thames counties in recent times, which include the decline and loss of the solitary bees *Andrena timmerana, A. rosae, A. humilis* and *A. pilipes*; and the increase in formerly rare species such as the bee, *Eucera longicornis*; the Hornet, *Vespa crabro*; and the Ant beetle *Thanasimus formicarius* (Fitter, 1985).

The long history of wildlife recording in these counties has been maintained by the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT).

As a consequence of these activities, the remarkable insect fauna of the Goring district has been known for many years. The Hartslock Reserve (SU 616796) in particular, (which is adjacent to the Thames towpath to the south-east of Goring, and a twenty minute walk from Goring railway station) is one of the most well-recorded nature reserves in the UK. (This 11 acre chalk grassland reserve, which is a Site of Special Scientific Interest (SSSI), was purchased by BBOWT in 1975 for the protection of the very rare Monkey orchid *Orchis simia**, and is open to the public all year round.)

More about BBOWT

The on-going evolution, progression and amalgamation of the natural history societies of Berkshire, Buckinghamshire and Oxfordshire, eventually led to the formation of the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT). BBOWT has an exemplary record of land acquisition and conservation practice, and is responsible for maintaining and monitoring the progress of species and habitats on over 90 nature reserves. This management has included the implementation of a large number of Priority Species Projects (which were developed from a list of 400 threatened species known to occur within the three counties).

The Trust has its own grazing flock of sheep, which is used to maintain chalk grassland and certain other habitats, and also has an army of volunteers who are responsible for engaging in conservation activities such as scrub clearance.

* Plants have occasionally been crushed by careless photographers. For those who have an interest in this very rare orchid, please be careful!

BBOWT has maintained the historical tradition of acquiring land for conservation purposes (the first record of land acquisition dates back to 1902, when the Ashmolean Natural History Society of Oxfordshire, which was formed in 1828, acquired part of Cothill Fen in Berkshire) and has also been responsible for the creation of nature reserves (*e.g.* in urban environments).

BBOWT (and its predecessor, the Naturalists' Trust, BBONT) has also developed a policy of providing an educational role to schools and teachers, conservation groups, and the community in general. The value of these activities cannot be underestimated, and BBOWT's efforts to provide the younger generation with 'hands-on' experience of their natural environment, has done much to encourage a new generation of naturalists and conservationists.

More information on BBOWT can be found in their informative publication: *Where to go for Wildlife in Berkshire, Buckinghamshire and Oxfordshire* (2000), which contains details of all the BBOWT nature reserves, including site illustrations, directions, and species of interest likely to be encountered at each site.

Habitats

There are a variety of habitats associated with the Goring district, and the most important of these are the chalk downland habitats of the Chiltern Hills. (The Chiltern Hills approach Goring (SU 6080) from the north-east, through Wendover in Buckinghamshire, and on to Goring *via* Watlington.) Specifically, chalk grassland is the most important habitat feature of the Chilterns, and this species-rich, agriculturally unimproved grassland, holds a considerable number of UK BAP Priority Species. (This habitat is also important in an international context, and calcareous grassland, which is considered to be a rare and threatened habitat in Europe, is listed on Annex 1 of the EC Habitats Directive.)

Interestingly, the calcareous grasslands of the Chiltern Hills are characteristically short and dominated by fine leaved grasses, while those of the Berkshire Downs (and the Cotswolds) are characterised by taller grasses, which may become dominated by Tor grass *Brachypodium pinnatum* (Oxfordshire HAP for Chalk and Limestone Grassland, 1998). The Chilterns have also been less affected by intense agricultural practices than the adjacent Berkshire Downs (which are now known simply as 'the Downs' after the 1974 county boundary changes), and generally contain a richer assemblage of chalk downland species. (Paul (1989) has commented on this difference in species richness with respect to the Orthoptera.)

Plate 02AB: Silver-studded blue *Plebejus argus* (male): New Forest, Hants.
(Sutton, Silver-studded blue . . .)

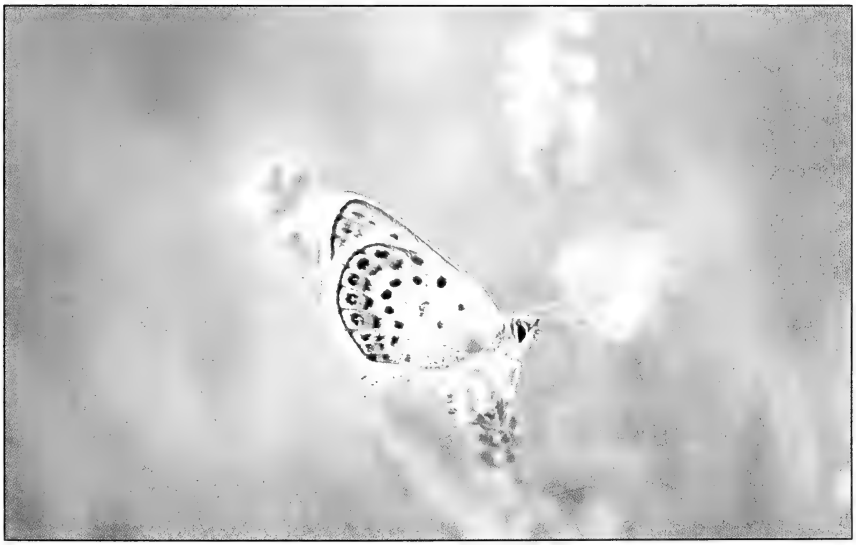

Plate 02AC: Underside of male Silver-studded blue *Plebejus argus* showing iridescent 'silver studs': New Forest, Hants.
(Sutton, Silver-studded blue . . .)

Plate 02AD: *Cretaceus* form of the Silver-studded blue (female): Isle of Portland, Dorset. (Sutton, Silver-studded blue . . .)

Plate 02AE: *Cretaceus* form of the Silver-studded blue (male): Isle of Portland, Dorset. (Sutton, Silver-studded blue . . .)

Plate 02AF: Teneral male Club-tailed dragonfly *Gomphus vulgatissimus*: Goring District, Oxfordshire.

(Sutton, Classic Wildlife Sites – Goring . . .)

Plate 02AG: Red and white forms of the Brassica bug *Eurydema oleracea* on its foodplant, Garlic mustard *Alliaria petiolata*: Goring District, Oxfordshire.

(Sutton, Classic Wildlife Sites – Goring . . .)

Plate 02AH: Grizzled skipper *Pyrgus malvae*: Goring District, Oxfordshire.
(Sutton, Classic Wildlife Sites – Goring . . .)

Plate 02AI: Adonis blue *Lysandra bellargus*: Goring District, Oxfordshire.
(Sutton, Classic Wildlife Sites – Goring . . .)

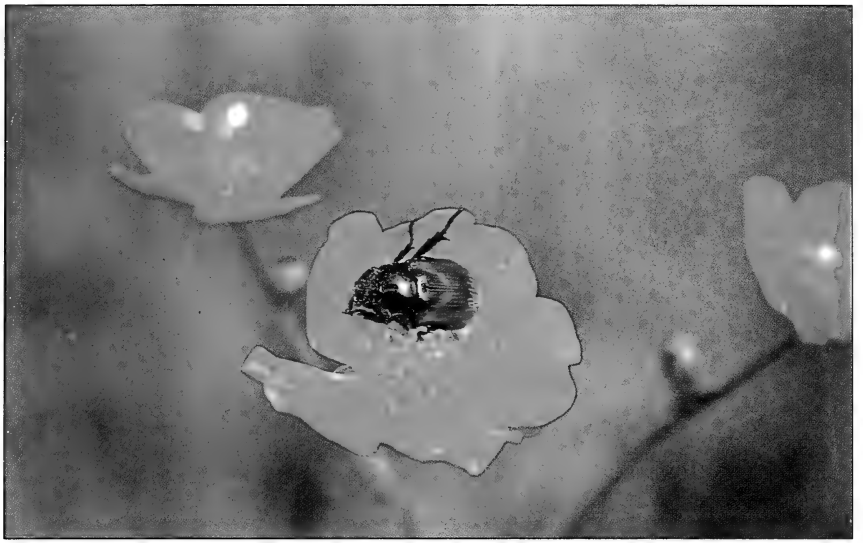

Plate 02AJ: Garden chafer *Phyllopertha horticola*: Goring District, Oxfordshire.
(Sutton, Classic Wildlife Sites – Goring . . .)

Plate 02AK: New Forest specimen of the Noble Chafer *Gnorimus nobilis*.
(Sutton, 2nd Symposium – Saproxylic . . .)

Plate 02AL: Timberman beetle, *Leiopus nebulosus*: Denny Wood, New Forest.
(Sutton, 2nd Symposium – Saproxylic . . .)

Plate 02AM: Hornet beetle *Strangalia aurulenta*: Denny Wood, New Forest.
(Sutton, 2nd Symposium – Saproxylic . . .)

Plate 02AN: The weevil, *Otiorhynchus armadillo*, a pest species which has now become established in the UK: Egham, Surrey.

(Sutton, 2nd Symposium – Saproxylic . . .)

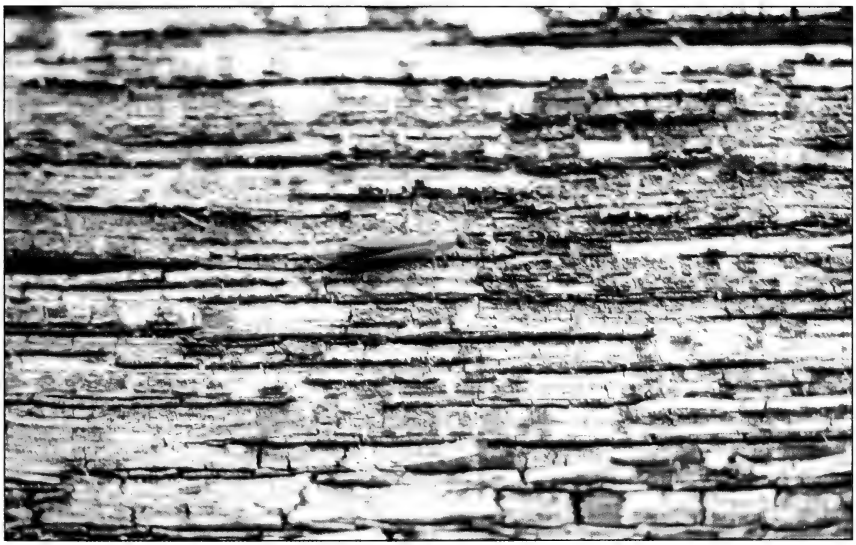

Plate 02AO: The rare *Lymexylon navale* : Windsor.

(Sutton, 2nd Symposium – Saproxylic . . .)

Plate 02AP: Conference party at Denny Wood, New Forest.
(Sutton, 2nd Symposium – Saproxylic . . .)

Plate 02AQ: The Bryony ladybird *Epilachna (Henosepilachna) argus*: Bushy Park, Middlesex.
(Sutton, Bryony ladybird . . .)

The Chiltern Hills in the Goring district are well wooded, and provide much suitable habitat for an impressive number of saproxylic (dead wood) insects, and other woodland species, and the globally threatened Stag beetle, *Lucanus cervus*, has been recorded from this area.

Certain scrub habitats, particularly those where Juniper *Juniperis communis* is present, are of great importance to many insects. Species associated with scrub habitat on the Chilterns include the UK BAP Priority species: Rufous grasshopper *Gomphocerripus rufus*, and the Duke of Burgundy butterfly *Hamearis lucina*, (although this latter species has not been recorded in the Goring district for almost a decade.)

Other habitats include the aquatic habitat provided by the River Thames itself (which is home to the RDB2 Mayfly, *Ephemera lineata*), and its associated reedbeds and water meadows.

Insects of the Goring District

The Thames at Goring is considered to be the classic site for the observation of the nationally scarce Club-tailed dragonfly *Gomphus vulgatissimus*, (Plate 02AF), in the UK. This species, which has Notable B status (*i.e.* thought to occur in between 31 to 100 10km squares on the National Grid), is recorded from only a handful of river systems in the UK. Other dragonflies and damselflies that have been recorded along the Thames at Goring include the White-legged damselfly, *Platycnemis pennipes* (Notable B); Blue-tailed damselfly, *Ischnura elegans*; Common blue damselfly, *Enallagma cyathigerum*; Azure damselfly, *Coenagrion puella*; Red-eyed damselfly, *Erythromma najas*; Emerald damselfly, *Lestes sponsa*; Beautiful demoiselle, *Calopteryx virgo*; Banded demoiselle, *Calopteryx splendens*; Brown hawker, *Aeshna grandis*; Southern hawker, *Aeshna cyanea*; Migrant hawker, *Aeshna mixta*; Broad-bodied chaser, *Libellula depressa*; and the Common darter, *Sympetrum striolatum*.

The Orthoptera (grasshoppers, crickets, bush-crickets, earwigs and cockroaches) of Berkshire, Buckinghamshire and Oxfordshire have been described in detail by Paul (1989), in a well-illustrated work which provides 10 km square distribution maps for each species. Orthoptera present in the Goring district include the Oak bush-cricket, *Meconema thalassinum*; Dark bush-cricket, *Pholidoptera griseoaptera*; Speckled bush-cricket, *Leptophyes punctatissima*; Slender groundhopper, *Tetrix subulata*; Common groundhopper, *Tetrix undulata*; Stripe-winged grasshopper, *Stenobothrus lineatus*; Woodland grasshopper, *Omocestus rufipes* (Notable B); Common green grasshopper, *Omocestus viridulus*; Rufous grasshopper, *Gomphocerripus rufus* (Notable B); Common field grasshopper,

Chorthippus brunneus; Meadow grasshopper, *Chorthippus parallelus*; Common earwig, *Forficula auricularia*; and Lesne's Earwig, *Forficula lesnei*. Two recent arrivals to this region are the Roesel's bush-cricket, *Metrioptera roeselii*, and the Long-winged conehead, *Conocephalus discolor*. These species have Notable B and Notable A status respectively, but in view of the extensive range expansions that have been observed for each species since the 1980s, this Notable status should now be removed. The Great green bush-cricket, *Tettigonia viridissima*, is not recorded from the area, but can be found nearby on the BBOWT nature reserve at Warren Bank (SU 653859).

The butterflies of Berkshire, Buckinghamshire and Oxfordshire have been described (with 10 km square distribution maps) by Asher (1994). Butterflies found on chalk grassland in the Goring district include: Chalkhill blue, *Lysandra coridon* (UK BAP species); Adonis blue, *Lysandra bellargus* (Notable B, UK BAP Priority species); Brown argus, *Aricia agestis*; Common blue, *Polyommatus icarus*; Dark green fritillary, *Argynnis aglaja*; Green hairstreak, *Callophrys rubi*; Dingy skipper, *Erynnis tages*; and Grizzled skipper, *Pyrgus malvae* (UK BAP Priority species). The Small blue *Cupido minimus* (UK BAP Priority species) has been recorded at one site just north of Hartslock, and there are several records of small numbers at other sites in and around Goring (D. Sazer, *pers.comm.*, 24.06.02). The White letter hairstreak, *Satyrium w-album* may still be present, but the Duke of Burgundy *Hamearis lucina* (which may still be recorded from downland to the west of the Goring Gap (Asher, 1994), is otherwise absent from the Goring district. A number of other species are found in the district, such as the Marbled white, *Melanargia galathea* (which is associated with longer sward); the commoner Whites, Browns and Skippers; and the migrant Clouded yellow *Colias croceus*. The Silver-spotted skipper, *Hesperia comma*, is not present in the area (although the presence of a single egg was recently reported from Hartslock; D. Sazer, *pers.comm.* 26.07.02), but is recorded nearby on the Chiltern escarpment of Watlington Hill (SU 7093) above Watlington, which is owned by the National Trust.

Several hundred species of moth have been recorded from the Goring district, including a number of scarce UK BAP Priority species such as the Chalk carpet, *Scotopteryx bipunctaria*. A full list of scarce and threatened butterflies and macromoths, and their conservation requirements, are given in the Butterfly Conservation Regional Biodiversity Action Plan for the Thames region (2000).

Highlights of the Hemipteran fauna (which has not been studied as well as other groups) include the Notable B shieldbug, *Canthophorus*

impressus, and the Brassica bug *Eurydema oleracea*, both of which are discussed below. A wide range of plant bugs and grass bugs are also present.

Coleopteran fauna has been well-studied, and includes records for the Stag beetle, *Lucanus cervus* (UK BAP Priority species, Notable B); the ground beetles, *Harpalus ardosiacus* (Notable B) and *H. schaubergerianus* (Notable B); the rove beetle, *Rugilus similus* (Notable B); the jewel beetles (Buprestidae) *Agrilus sinuatus* (Notable A) and *Aphanisticus pusillus* (Notable B); the oil beetle *Meloe rugosus* (RDB3, UK BAP Priority species); and the longhorn beetle *Mesosa nebulosa* (RDB3).

Diptera in this region, (which have been well-recorded in recent years at the Hartslock Reserve), include the spectacular Hornet robber fly, *Asilus crabroniformis* (RDB2, BAP Priority species); the Snipefly, *Rhagio strigosus* (RDB3); the hoverfly, *Epistrophe euchroma* (RDB3); the flies, *Myopa extricata* (RDB3) and *Dorycera graminum* (RDB3, UK BAP Priority species); Sheep nostril fly, *Oestrus ovis* (pRDB3); and the parasitic flies, *Admontia seria* (pRDB2) and *Graphogaster brunnescens* (RDB3).

Hymenoptera include an impressive complement of Ruby-tail wasps such as *Cleptes nitidulus* (Notable A) and *Chrysogona gracillima* (RDB2); the spider hunting wasp, *Aporus unicolor* (Notable A); the solitary wasp, *Psenulus schenki*; the ant, *Lasius umbratus*; and the solitary bees *Andrena hattorfiana* (RDB3) and *Sphecodes spinulosus* (RDB2).

Diary notes: A visit to Hartslock, 21.05.02

I arrived at the railway bridge (SU 606796) on the bank of the Thames to the south Goring in Oxfordshire at 6.45 AM on the 21st of May, hoping to observe and photograph the Club-tailed dragonfly (Plate 02AF) in its final stage of metamorphosis. Apparently, this bridge provides a communal "roost" site for the Club-tailed dragonfly in the evenings, and an excellent place to observe this species during the days when the mass, synchronised emergence of adults occurs. The day was grey and overcast, and the grass was soaked from the fine mists of rain that fell intermittently. After searching the river bank in vain for exuviae (larval cases), it soon became clear that not only was I out of luck, but I may also have been over-optimistic with my prediction of an early emergence of these dragonflies.

I made my way along the Thames towpath in an easterly direction, towards the Hartslock nature reserve. As I scanned the foliage at the side of the path, I saw a bedraggled Cockchafer, *Melolontha melolontha*, sitting on a bramble leaf, waiting patiently, as I was, for a

break in the weather. Things were looking hopeful, and a closer examination of this foliage revealed more beetles: *Denticollis linearis*; the Cardinal beetle, *Pyrochroa serraticornis*; the green Weevil, *Phyllobius pomaceus*; and the Click beetle, *Athous haemorhoidalis*. Dark bush-cricket, *P. griseoaptera*, and Speckled bush-cricket, *L. punctatissima*, nymphs were also found on nettles. As I sat on the bench at the top of the hill next to the Hartslock Reserve, I had an excellent view of the Goring Gap. In the distance were well-wooded hills. To my right, chalk downland, and to my left, the water meadows on the other side of the Thames, which shone brightly with yellow buttercups as the first sunlight of the day broke through the slowly disappearing clouds. I walked down the hill to the Hartslock Reserve information sign. Next to the fence of the reserve, I discovered several specimens of the Brassica bug, *Eurydema oleracea* on its foodplant, Garlic mustard, *Alliaria petiolata* (Plate 02AG), a new record for the Hartslock reserve. The appearance of the Brassica bug at Hartslock is in keeping with the current range expansion observed for this species. It is widespread but local in southern England (south of Peterborough), and seems (generally) to have undergone expansion within its old range, rather than spread to new areas (P.Kirby, *pers.comm.*, 17.06.02). It has also been recorded that this species, which was virtually unknown from Sussex as little as five years ago, now turns up regularly in that county (P.Hodge, *pers.comm.*, 25.07.02.) The Brassica bug is a variable species, with ground colour ranging from metallic green to black, and spots ranging from white, through yellow, to red. Plate 02AG shows a mating pair of green Hartslock specimens, where the male has red spots, and the female has white spots.

Another Hemipteran speciality at Hartslock is the shieldbug, *Canthophurus (Sehirus) impressus*. This species is found on the uncommon chalk downland plant, Bastard toadflax, *Thesium humifuscum*. The remarkable story of how all UK specimens of the shieldbug formerly known as *Sehirus dubius*, came to be correctly identified as *C. impressus* (resulting from the work of Dr Bernard Nau, who identified specimens found at Hartslock), is documented in an article to be published in a forthcoming edition (2002?) of the *Entomologists' Monthly Magazine*. Since this discovery, it has been found that specimens of *C. impressus* from Belgium, Spain, Germany and Luxembourg have also been misidentified as *S. dubius*! (B. Nau, *pers.comm.*, 27.07.02.)

It was 11a.m., and the sun was now shining strongly in the blue sky above. As I walked towards the Hartslock reserve I could see the metallic green Leaf beetles, *Gastrophysa viridula*, on the netted remains of the

dock leaves that they had decimated, and also found a specimen of the 24-spot Ladybird, *Subcoccinella 24-punctata*. White helleborines *Cephalanthera damasonium*, were beginning to flower in the dappled shade of the woodland, and a small but dazzling display of Monkey orchids, *Orchis simia*, were seen in the wardened field at the top of the hill. (A warden is present at this site during the orchid's flowering season.)

I walked away from the Monkey orchid field, eastwards towards the area of open downland overlooking the Thames, adjacent to the orchid site. I immediately recorded a number of beetles on various plants: the Longhorn beetle, *Grammoptera ruficornis*, abundant on wild roses; the Flower beetles, *Oedemera nobilis* and *Malachius bipustulatus* on buttercups; the Soldier beetles *Cantharis livida* and *C. fusca*; and an unidentified *Hister* species. Butterflies were present in abundance, and included the Small heath, *Coenonympha pamphilus*; Orange-tip, *Anthocharis cardamines*; Common blue, *Polyommatis icarus*; Green-veined whites, *Pieris napi*; Dingy skippers, *Erynnis tages*; Grizzled skippers, *Pyrgus malvae* (Plate 02AH); and the Green hairstreak, *Callophrys rubi*. The Grizzled skippers and Green hairstreaks tended to occur towards the bottom of the hill, which was sheltered from the stiff breeze that harried the shrubs and grasses on the slope. Wild strawberry plants, *Fragaria vesca*, the foodplant of the Grizzled skipper (although its caterpillars will also feed on the related plants; Creeping cinquefoil, *Potentilla reptans*, and Tormentil, *Potentilla erecta*), were present in an area of longer grass and light scrub. Attempts to find a specimen of the Adonis blue, *Lysandra bellargus* (Plate 02AI), which has been recorded in small numbers on the Hartslock Reserve, were unsuccessful on this occasion. Another Leaf beetle, *Cryptocephalus aureolus*, was present on buttercups, and at the bottom of the hill, many sun-spangled Garden chafers (also known as Bracken chafers), *Phyllopertha horticola* (Plate 02AJ), were observed swarming around the shrubs and rose bushes. A well-worn specimen of the Beefly, *Bombylius major*, was also seen feeding at flowers.

On the way back from Hartslock towards the towpath, I walked along a path, which was shaded by trees on one side, and flanked by an open field on the other. This field, which contained a colourful show of plants, including many umbellifers, had been transformed since I had walked in the opposite direction early that morning. There were dozens of Banded demoiselles, *Calopteryx splendens*, flying in the field. On the path itself I found a large specimen of the Bloody-nosed beetle, *Timarcha tenebricosa*, and the Common groundhopper, *Tetrix undulata*. There were plenty of Cardinal beetles, *P. serraticornis*, in the

foliage, and this species appeared to be having a very good year. Suddenly, I saw a specimen of my original quarry, the Club-tailed dragonfly, hanging from an umbellifer in the field (Plate 02AF). Luckily, it was a freshly emerged and fairly inactive teneral male, and was not unduly disturbed by the nearby altercation involving a barbed wire fence, which left me prostrate, and staring up from the bushes at the denim material that had been deposited on the business end of this construction. Red-eyed damselflies, *Erythromma najas,* and White-legged damselflies, *Platycnemis pennipes,* were also present in this field, and a single specimen of the rarer Cardinal beetle, *Pyrochroa coccinea,* was encountered.

Along the towpath, several more Club-tailed dragonflies were observed, but in each case, as soon as I came to within a few feet, they took off vertically, flying upwards until they had completely disappeared.

It was good to see that the boats on the Thames were obeying the strict speed limits. A major cause of Club-tailed dragonfly mortality has been excessive wash from river traffic. This wash can be devastating for this species during the vulnerable stages of adult emergence, because unlike other species, it emerges horizontally on the sandy bays of the river, and it also has a synchronised mass emergence. This can lead to the drowning of hundreds of emerging adults in a single wash event.

In the reedbeds, two more beetles were discovered; a very dark metallic blue form of the Reed beetle, *Plateumaris sericea,* and the Leaf beetle, *Galerucella lineola.*

As I reached my original starting point under the railway bridge, I found several specimens of the large black Carrion beetle, *Necrodes littoralis,* which had been attracted to a nearby Muntjac carcass. This species, which was formerly strongly associated only with coastal habitats, has colonised many inland sites in recent years.

Finally, a brief foray into the flower-rich water meadows on the western side of the bridge, (which are known to contain the rare Snakes-head fritillary, *Fritillaria meleagris*), turned up two more Club-tailed dragonflies, and the Click beetle, *Agrypnus murinus.* A number of Small tortoiseshells, *Aglais urticae,* Peacocks, *Anachis io,* and Brimstones, *Gonepteryx rhamni,* were also seen in these meadows.

Acknowledgements

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Bernard Nau, Peter Kirby, Roger Hawkins and Peter Hodge (Hemiptera); Deborah Sazer and Paul Allen (Lepidoptera); Chris Raper (Hartslock invertebrate fauna); John Paul (Orthoptera); Mike Edwards (Hymenoptera); and Wendy Chaffin and BBOWT (for their generous provision of site literature).

References

Asher, J. (1994). *The Butterflies of Berkshire, Buckinghamshire and Oxfordshire.* Pisces Publications, Oxford.

BBOWT (2000). *Where to go for Wildlife in Berkshire, Buckinghamshire and Oxfordshire.* Nature Conservation Bureau Ltd., Newbury, Berkshire.

Butterfly Conservation (2000). *Regional Action Plan, Thames Region,* Butterfly Conservation, Wareham, Dorset.

Fitter, R. (Ed.), (1985). *The Wildlife of the Thames Counties.* Robert Dugdale, Oxford.

Nau, B. (2002?). *Canthophorus dubius* (Scopoli) (Hem., Cydnidae) in Britain are *C. impressus* Horvath, *Entomologists' Monthly Magazine.* (In Press.)

Oxfordshire Habitat Action Plan for Chalk and Limestone Grassland (Part of Oxfordshire BAP), (1998), Oxfordshire County Council.

Paul, J. (1989). *Grasshoppers and Crickets of Berkshire, Buckinghamshire and Oxfordshire,* Pisces Publications, Oxford.

2nd Symposium and Workshop on the Conservation of Saproxylic Beetles in Ancient Trees (with special attention to Stag beetle *Lucanus cervus*, Violet click beetle *Limoniscus violaceus*, Noble chafer *Gnorimus nobilis* and Variable chafer *Gnorimus variabilis*)

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Introduction

The 2nd Symposium and Workshop on the Conservation of Saproxylic Beetles in Ancient Trees was held at the Royal Holloway, University of London, on the 25th-27th June 2002.

This conference was organised by the People's Trust for Endangered Species (PTES) and English Nature (EN), and was attended by delegates from across Europe, including representatives from Eastern Europe, Scandinavia and Russia.

The purpose of this meeting was to discuss the conservation measures being used to protect ancient tree habitats in Europe, and

provide an overview of the current status of the four conference species, the Stag beetle *Lucanus cervus*, Violet click beetle *Limoniscus violaceus*, Noble chafer *Gnorimus nobilis* (Plate 02AK) and Variable chafer *Gnorimus variabilis*. This meeting provided an excellent platform for the exchange of information between European groups, and an opportunity to assess the current state of knowledge regarding the saproxylic fauna of Britain and Europe.

The conference proved to be an enlightening experience, and produced some different and fascinating perspectives to a number of conventionally accepted ideas. Take for example the belief that Neolithic man was confronted with "Urwald", (wildwood or primeval forest, *i.e.* a vast expanse of closed canopy lowland woodland), when he first began to influence the landscape of the British Isles. This was not the case according to the increasingly accepted work of Vera (2000), and there is strong evidence to suggest that large mammals were responsible for maintaining a mosaic of open forest habitats, which included open glades, and even larger expanses of grassland.

And what about trees with respect to saproxylic (dead wood) species, surely you can't have enough trees? Again, too many trees can be a bad thing, particularly for thermophilous (warmth-loving) species which have very specific humidity requirements, such as the Violet click beetle, *Limoniscus violaceus*, (RDB1, BAP Priority), a species restricted to a handful of ancient trees in the UK. Shade decreases biodiversity, a lesson learnt in dramatic fashion with the loss of woodland coppicing practice in the UK, and saproxylic (and many other) species have disappeared from woodland habitats which have become too shaded. The cessation of Holly management (where Holly was used as winter feed for livestock), was also responsible for creating light deficient conditions, and cutting back Holly growth is now an important part of maintaining woodland biodiversity in many areas (Read and Spencer, 2001).

The management of these over-shaded habitats was discussed, including the creation of lighter conditions in dense woodland by tree-felling operations. The importance of closed canopy woodland, which is an important source of ancient tree habitats, should not be underestimated (Tubbs, 2001), but where clearance is required to produce optimum conditions for biodiversity, then, as ever, judicious management is required. The preservation of trees (from young to old) which will maintain the continuum of woodland habitats is essential. Also, the removal of too many trees at once should be avoided. The microclimate associated with tree habitats needs to change gradually if

the loss of that habitat and species is to be prevented, and it has also been discovered that trees can suffer from excessive solar exposure (sunburn!). A phased programme of tree removal is necessary to prevent solar damage to newly exposed trees.

Many other topics of discussion were equally thought provoking: should trees be viewed as life support systems for fungi?; can our rarest Elaterid really be successfully conserved by depositing dead animals into a re-erected hollow tree?; and how useful are beetles as indicator species for ancient woodland?

Before these questions are answered, it is useful to understand why the study of saproxylic fauna is such an important conservation issue.

The conservation importance of UK saproxylic fauna

Saproxylic fauna are species that are dependent, during some part of their life-cycle, on habitats provided by the wood decay process. There are over 1,700 species of invertebrate in the UK which depend to a lesser or greater extent on decaying wood habitat for the successful completion of their lifecycle. This number represents 6% of the total UK invertebrate fauna (Alexander, 1999). (Coleoptera form a major component of this number, and the 700 or so species of saproxylic beetle constitute 17% of the total UK beetle fauna.) Probably the most important statistic of all, is that 38% of invertebrates associated with decaying wood habitats have conservation status, and among these species of conservation concern, are included some of our rarest and most threatened species. Moreover, the UK is increasingly recognised as having the largest proportion (by far) of ancient trees north of the Mediterranean region (Green, 2001), and these trees provide habitat for many internationally important populations of rare and threatened species.

A complex of habitats

The are a considerable number of habitats associated with the wood decay process, and this is the reason that so many species are able to live together in ancient tree communities. These species occupy an incredible number of ecological niches within this dynamic and continually changing ecosystem. In addition to habitats created through the continual process of fungal decay, many other habitats are also present, including those provided by epiphyte communities, *e.g.* algae, mosses, lichens and liverworts. A report describing the extraordinary number of species associated with living and decaying timber in Britain and Ireland (Ireland has around 600 species of saproxylic invertebrates), including a checklist, and details of habitat requirements, is provided by Alexander (2002).

The role of fungi – the nutrient providers

During the conference, the question arose: should trees be regarded as life support systems for fungi? The simple answer is yes. Trees are also "life-support" systems for a whole variety of species, but it is this relationship with fungi which is largely responsible for the richness of life associated with veteran trees. Saproxylic invertebrates *need* fungal communities, and fungal colonisation is a fundamental requirement for many species. In fact, it is not the species of tree that is important for these saproxylic species, but the species of fungus that colonises the tree, which will determine their presence or absence.

Trees also need fungal communities. The importance of fungi in the woodland cycle has long been recognised, and trees depend on the activity of fungi to break down organic material and provide nutrients. They also require fungi to decay the dead heartwood at the centre of their structure to release nutrients for re-use. An ancient hollow tree, which has provided a substrate for complex fungal communities over hundreds of years, is a healthy tree!

Trees and fungi – a re-education

A major problem that has led to the continued loss of veteran trees in the UK, is the belief that the health of trees is compromised by the presence of fungal communities. Of course there are serious pathogens that can lead to tree death, but these should not be confused with the large number of fungi which are an integral (and beneficial) part of the natural process of wood decay.

The message to get across to council tree officers, and those with a responsibility for looking after veteran trees, is that trees which are colonised by fungus are *not* sick trees. In the interests of safety, certain trees may need to be removed or "pruned" in areas where they pose a potential hazard to people or property, but this should be done in a sympathetic manner. Tree surgery should leave as much habitat as possible, and tree removal in particular, should not entail complete removal of the tree stump. The sympathetic management of veteran trees in public open spaces, which includes details of risk assessment, safety policy, and options for management, is discussed in the recent NACONEX publication, *Tools for preserving woodland biodiversity* (2001).

The Saproxylic Quality Index (SQI)

Saproxylic beetles have proved to be very useful as indicators of ancient woodland habitat, and a Saproxylic Quality Index (SQI) has been developed to prioritise woodland habitats in terms of their nature

conservation importance. (An Index of Ecological Continuity (IEC), which uses species which indicate the long-term continuity of dead-wood habitats in ancient woodlands, has also been developed (Harding and Rose, 1986).) Full details of the SQI, including a list of saproxylic Coleoptera, their "rarity" scores, and potential sources of error, are given in Fowles *et al.* (1999).

Conference programme

The following lectures were presented at the meeting: *The Status of saproxylic beetles in Britain* (Matt Smith, UK); *Size variation in the Stag beetle* (Deborah Harvey, UK); *The status of* Lucanus cervus *in Switzerland*, (Eva Sprecher, Switzerland); *The 1998 British National Stag Beetle Survey*, (Doug Napier, UK); *Chemical ecology and conservation of the Stag beetle*, (Jason Chapman, UK); *Conservation of* Lucanus cervus *in Spain, an amateur's perspective*, (Marcos Mendez, Spain); *The British saproxylic invertebrate fauna*, (Keith Alexander, UK); *The Violet click beetle* Limoniscus violaceus *(Müller) in Britain*, (Paul Whitehead, UK); *Subcortical space as an environment for palaeoendemic and young groups of Coleoptera, including examples of saproxylic beetles (Nitidulidae, Coleoptera)*, (Alexander Kirejtshuk, Russia); *The work with ancient trees and their invertebrate fauna in the county Östergötland in Sweden*, (Nicklas Jansson, Sweden); *An ecological history of woodland in the New Forest and its impact on the forest's present day assemblage of saproxylic insects*, (Jonathon Spencer, UK); *Saproxylic Latvia – The situation, species diversity and possibilities*, (Dmitry Telnov, Latvia); *The Noble chafer* Aleurostictus nobilis *(Linnaeus)(Col., Scarabaeidae) in Britain*, (Paul Whitehead, UK); *The occurrence and conservation status of* Limoniscus violaceus *and* Ampedus quadrisignatus *in central Slovakia*, (Peter Zach, Slovakia); *Population ecology and the conservation of saproxylic beetles living in hollow oaks in Sweden*, (Thomas Ranius, Sweden); *Exploring the bocages in the west of France for the conservation of saproxylic beetles* (Osmoderma eremitum, Gnorimus variabilis, Cerambyx cerdo, Lucanus cervus), (Vincent Vignon, France).

Full details of the conference, including lecture abstracts and details of poster presentations can be obtained from PTES: 15 Cloisters House, 8 Battersea Park Road, London SW8 4BG. enquiries@ptes.org

In addition to the lecture programme, there were also trips to the New Forest in Hampshire, and Windsor Great Park.

New Forest Trip – 26th June 2002

The New Forest trip was led by Jonathan Spencer. Upon arriving at Denny Wood in mid-afternoon, the conference party was introduced to a New Forest ranger, who promptly produced a tank containing many specimens of the Rose chafer *Cetonia aurata*. These specimens, which were collected from his garden in Ringwood, included a spectacular purple variety of this species. Another member of this family (Scarabaeidae), and one of the species of interest at the conference, the Noble Chafer, *Gnorimus nobilis* (Plate 02AK), can still be found in the New Forest. This population is of interest, because unlike other UK populations of this rare insect, which are associated with fruit trees (Cherry, Plum, and Apple), the New Forest population is associated with Oak trees.

The weather was fine and sunny, and the conference party quickly dispersed to begin looking for insects. Within a few minutes, the Scarab beetle, *Onthophagus coenobita* had been found, and the remains of the rare saproxylic beetle, *Lymexylon navale*, was discovered in a spider's web. This species, which is listed as RDB2 (Vulnerable), has a maximum rarity score (32 points) in the Saproxylic Quality Index. The Melandryid, *Phloiotrya vaudoueri*, (Notable B) was also found. The birdsong of the woodland mingled with the rattling of sticks above beating trays, and specimens of the Weevil, *Curculio glandium*, and the Timberman, *Leiopus nebulosus* (Plate 02AL), quickly followed.

At the site known as "Beech Cathedral", several more species were found, including the nationally scarce (Notable A) Hornet beetle, *Strangalia aurulenta* (Plate 02AM), Lesser stag beetles, *Dorcus parallelipipedus*, *Cantharis nigra*, and a large Hornet, *Vespa crabro*.

Many immature Wood crickets, *Nemobius sylvestris*, were found among leaf litter in the enclosure, and just prior to the conference party photo opportunity (Plate 02AP), our friend the ranger returned with a Grass snake that had been terrorising a local Spar shop.

In the evening back at the Royal Holloway, just before dusk, the Weevil, *Otiorhynchus armadillo* (Plate 02AN), was taken from one of its potted Viburnums. This pest species, which is a recent UK colonist (Barclay, 2000), is a central European mountain species which has recently been added to the British list (Mann, 2002). There were also colonies of House crickets, *Acheta domestica*, at the University, which may have been present at the site for a considerable number of years.

Trip to Windsor Great Park – 27th June 2002

The Windsor trip was led by Ted Green. Before arriving at the site, Peter Hammond showed the conference party a number of ancient Oak

trees on the outskirts of the Park (some of which were over one thousand years old), and explained that some single trees at Windsor, have a higher index for saproxylic species than any other UK site, including the New Forest and the Forest of Dean. In one of his articles, Ted Green (2001) asks the question, "Should ancient trees be designated as Sites of Special Scientific Interest?" Fowles *et al.* (1999) consider a site with a SQI over 500 to be a site of international importance. Based on this figure, Windsor clearly has single trees of international importance, and these trees are certainly Sites of Special Scientific Interest in the truest sense of that designation. However, no tree is an island, and if a single tree is to be given SSSI status, it must be because it is surrounded by suitable habitat in the short term, (including nectar sources *etc.*), and in an area where the continuity of habitat is assured in the long term, (*i.e.* in the vicinity of other maturing trees.)

Ted Green showed the conference party the conservation work that was being undertaken in the Park, which included removal of Turkey oak, an alien species introduced to the UK in 1835. Tree felling and Holly management were used to manage sites that had become too shaded. Many habitat creation experiments were observed, including the re-erected hollow trees that had successfully been used to breed the Violet click beetle. These hollow trees, which were strapped to, and supported by, large standing trees, were filled with a variety of ingredients including wood mulch, racing pigeon waste, and even roadkill, in an attempt to create the natural conditions which would attract this species, and after eight years of experiments, the first larvae of this exceptionally rare insect appeared in one of the artificial habitats! Along the way, a Lesser stag beetle was encountered, and also a specimen of the Melyrid, *Axinotarsus marginalis*, a natural colonist which arrived in south-east England in the early 1980's, and which has now spread as far as the Midlands. A tree known to contain the Variable chafer, *Gnorimus variabilis*, was seen, but only its larval pellets (which are characteristic to a generic level) were found.

Peter Hammond took the party to an ancient fallen tree which contained a colony of the ant, *Lasius brunneus*, and the "Windsor weevil", *Dryophilus corticalis*, a species found only at Windsor. *Lymexylon navale* (Plate 02AO) was again encountered, as was the Ant beetle, *Thanasimus formicarius*, a strikingly marked Clerid beetle which feeds on the larvae of Bark beetles. The day-flying Forester moth, *Adscita statices*, was also recorded.

Conclusions

The conference laid the foundations for a joined-up European approach to the conservation of saproxylic insects and their habitats. It provided an excellent platform for the exchange of information between groups, and has promoted the dissemination of information regarding this important conservation issue.

Absent friends

There were two notable absences from the conference: Dr Roger Key (EN), the driving force behind these conferences, who was unfortunately absent through illness; and Ed Goode (PTES), who played a major co-ordinating role in the conference preparations. Ed's untimely departure shortly before the beginning of the conference was a great shock to everybody, and a great loss. He will be sadly missed. I would like to sincerely thank Clare Bowen (PTES), for kindly writing the words of remembrance at the end of this article.

Acknowledgements

Sincere thanks to Roger Key and English Nature; Clare Bowen, Val Keeble, Susan Sharafi, the late Ed Goode, and PTES; Jon Spencer and Ted Green for leading the enjoyable and informative trips, Peter Hodge and Max Barclay (*O. armadillo*), and Clive Turner (*Gnorimus nobilis*).

References

Alexander, K.N.A. (1999). The invertebrates of Britain's wood pastures, *British Wildlife*, **11** (No.2), pp.108-117.

Alexander, K.N.A. (2002). The invertebrates of living and decaying timber in Britain and Ireland – a provisional annotated checklist, *English Nature Research Report No.467*, English Nature, Peterborough.

Barclay, M.V.L. (2000). *Br. J. Ent. Nat. Hist.*, **13**, p.172.

Fowles, A.P., Alexander, K.N.A. and Key, R.S., (1999), The Saproxylic Quality Index: evaluating wooded habitats for the conservation of dead-wood Coleoptera, *Coleopterist*, **8** (Part 3), pp. 121-141.

Green, T. (2001). Should ancient trees be designated as Sites of Special Scientific Interest?. *British Wildlife*, **12** (No.3), pp.164-166.

Harding, P.T. and Rose, F. (1986). *Pasture-woodlands in Lowland Britain: a review of their importance for wildlife conservation*. Huntingdon: Institute of Terrestrial Ecology.

Mann, D. (2002). *Coleopterist*, **11**, pp. 52-63.

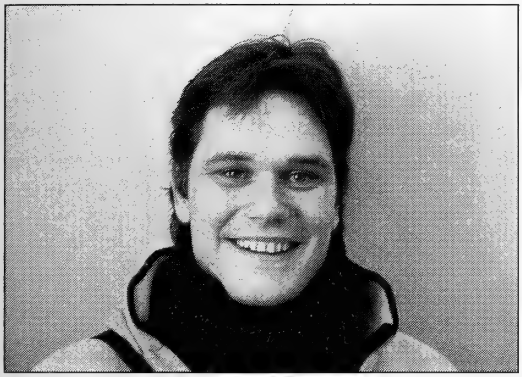
Read, H. and Spencer, J. (2001). The New Forest: Management of a unique and extensive historic landscape, in: *Tools for preserving woodland biodiversity*. Naconex Textbook 2. ISBN: 91-631-1131-7, pp. 91-95.

Read, H., Forfang, A.S., Marciau, R., Paltto, H., Andersson, L. and Tardy, B. (Eds.) (2001). *Tools for preserving woodland biodiversity*, Naconex Textbook 2, ISBN: 91-631-1131-7.

Tubbs, C.R. (2001). *The New Forest History, Ecology and Conservation*. Forest Ninth Centenary Trust, Lyndhurst.

OBITUARY
ED GOODE
1972 – 2002

Born in Cambridge in 1972, Ed developed his consuming interest in the environment while growing up in the beautiful Herefordshire countryside. As he grew up, he became closer and closer to the environment, forming an affinity with the natural world, observing badgers, foxes, bats, birds, beetles and many other creatures, teaching people to look around and think differently about nature.



Ed went off to university to study Environmental Sciences, and, as he began to blossom, his knowledge of conservation and animal ecology grew rapidly along with his enthusiasm for his chosen life.

Ed first started work at the Cloisters in London with the National Federation of Badger Groups and later for the People's Trust for Endangered Species. For him, it wasn't just work, but a way of life. He was dedicated to furthering the conservation cause and spent most of his spare time getting involved with various environmental projects. For Ed, the work was never done. At weekends he loved doing voluntary work at Woodlands Farm Trust. Ed will be missed by so many of the people he came into contact with. He has inspired us all to continue where he left off.

The Bryony Ladybird *Epilachna argus* (Geoffroy, 1785), a recent UK Colonist

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The Bryony ladybird *Epilachna argus* (Plate 02AQ) is a recent colonist in the UK, and was first recorded from West Molesey in Surrey (TQ 133678) on 14th May 1997 (Menzies and Spooner, 2000). The first

specimen was discovered by Miss Alysia Menzies (then five years old), who kept it to show her grandfather, Ian Menzies, who happened to be an entomologist with a particular interest in ladybirds! Upon finding that the insect was not a British species, it was sent to a ladybird specialist at CABI Bioscience, Dr Roger Booth, who identified the specimen as the Bryony ladybird *Epilachna argus* (Coccinellidae, Epilachninae), a phytophagous (plant eating) species from southern Europe.

The Bryony ladybird is an impressive and colourful insect, with a superficial resemblance to its smaller British relative, the 24-spot Ladybird *Subcoccinella 24-punctata*. (The 24-spot Ladybird, which also belongs to the subfamily Epilachninae, is the only native phytophagous ladybird in the UK.)

The extraordinary story of the discovery of this species by Alysia Menzies (who subsequently found the first specimen for 1998 (29.04), and a further 20 specimens (31.05-01.06.98) of this ladybird on its food plant, White bryony *Bryonia dioica* in a neighbour's garden), is documented in the first article describing the establishment of this species in Surrey (Menzies and Spooner, 2000), and in the Surrey Wildlife Trust publication, *The Ladybirds of Surrey*, by Roger Hawkins (Hawkins, 2000). Both publications provide details of the life-history of this species, and conclude that the Bryony ladybird will probably continue to expand at an impressive rate from its established range. The superbly illustrated and well-written Surrey Atlas (which is strongly recommended for those with an interest in ladybirds) also provides colour photographs of the adult and larva, and a county (tetrad) distribution map.

In the article by Menzies and Spooner, (*loc. cit.*), the Bryony ladybird is named as *Henosepilachna argus* (Fürsch, 1967). Subsequent analysis of specimens from West Molesey (by Roger Booth) has shown that "it is not a typical *Henosepilachna*, but intermediate to *Epilachna* in its characters" (Hawkins, 2000). Accordingly, this species is described as *Epilachna argus*, until further investigations bring the matter to a conclusion.

The specimen shown in Plate 02AQ was discovered in Bushy Park, near Teddington (Middlesex) at the Canal Plantation (TQ 151707) on 7th June 2000. It was found on waterside plants, but was obviously in the process of dispersal, and since Bushy Park is virtually opposite East Molesey in Surrey, probably originated from a colony on the other side of the Thames. At the time, the discovery of this specimen was thought to represent the first record for Middlesex (Peter Hodge, *pers. comm.*), but an article published a year later (D. A. Prance, 2001) describes the discovery of specimens at Sunbury-on-Thames (TQ 0969) on 20th May

2000, Upper Halliford (TQ 0968) on 21st May 2000, and Felthamhill (TQ 1071) on 15th July 2000.

White bryony belongs to the cucumber family (Curcurbitaceae), and it will be interesting to see if this species develops a taste for other, cultivated, members of this family in the UK, such as courgettes and marrows. (On the continent, the Bryony ladybird has been reported to attack melon plants.)

The Bryony ladybird is not the only "alien" species of ladybird to arrive on our shores. In recent years, there have been a number of records of "exotics", and these have been described by Majerus and Kearns (1989); Majerus (1994); Hawkins (*loc.cit.*); Mabbott (2001); and Boswell and Mabbott (2002).

Recently, there has been much debate regarding "alien" species in the UK, and what to do about them. One particular thread in the Newsletter of the London Natural History Society became particularly polarised (June 2002), after it was suggested by one contributor that non-native species should be eliminated. In the heated discussion that followed, there was even the suggestion that a policy of "elimination" for non-native species (such as rabbit, mink, fallow deer), would also have to take account of the introduced "alien" population of Red Kite in the Chiltern Hills, a flagship of the English Nature Species Recovery Programme! (Of course these are the personal opinions of LNHS contributors. Also, the LNHS is purely a recording society, and has no policy on this matter.)

The above debate, albeit an "all or nothing" approach, nevertheless raises the serious question of policy regarding the management of introduced species. In most cases, management is not necessary, and many introduced species have become integrated into the native flora and fauna without unduly affecting established native wildlife. Some "alien" species have also benefited native wildlife, and the classic example of this was observed when Adonis blue *Lysandra bellargus* and Silver-spotted skipper *Hesperia comma* colonies on chalk Downland began to disappear immediately, as the rabbit population succumbed to myxomatosis. However, management becomes necessary when introduced species (including rabbits) become aggressively invasive, to the detriment of native wildlife, and this has necessarily led to eradication programmes for species such as Coypu *Myocastor coypus* (Lever, 1977), and plants such as Rhododendron, Himalayan Balsam, Floating Pennywort and Japanese Knotweed (English Nature, 2000).

The problem of introduced species is exacerbated by our increasingly cosmopolitan existence, which has in turn increased the likelihood of species being introduced to the UK by a variety of methods. In addition

to the unintentional physical transportation of species across the Channel, garden centres and aquatic nurseries have been a significant source of "aliens".

In the meantime, we will wait with interest to see if the Bryony ladybird, which probably owes its existence in the UK to a Surrey garden centre, is added to the increasing list of "problem" species.

Acknowledgements

Sincere thanks to Peter Hodge, Ian Menzies, Roger Hawkins for useful discussion.

References

Boswell, P. and Mabbott, P. (2000). An African Ladybird, *Cheilomenes lunata*..., *Bull. Amat. Ent. Soc.*, **61** (No. 442), pp. 92-93.

English Nature Magazine. (March 2000). No.48, pp. 10-11.

Hawkins, R. (2000). *Ladybirds of Surrey*. Surrey Wildlife Trust, Surrey.

Lever, C. (1977). *The Naturalised Animals of the British Isles*, Hutchinson & Co., London.

Mabbott, P. (2001). Unusual and exotic ladybirds, *Newsletter of the London Natural History Society*, No. 166, p 12.

Majerus, M. E. N. (1994). *Ladybirds*. New Naturalist Series, 81. Harper Collins, London.

Majerus, M. E. N. and Kearns, P. W. E. (1989). *Ladybirds*. Naturalists' Handbooks 10. Richmond Publishing, Slough.

Menzies, I. S. and Spooner, B. M. (2000). *Henosepilachna argus* (Geoffroy) (Coccinellidae, Epilachninae), a phytophagous ladybird new to the U.K., breeding at Molesey, Surrey. *The Coleopterist*, **9**, pp. 1-4.

Newsletter of the London Natural History Society. (2002). No. 172, pp. 2-3.

Prance, D. A. (2001). *Henosepilachna argus* (Geoffroy) (Coccinellidae), in Middlesex. *The Coleopterist*, **10**, p.4.

Book Review

Variation in British Butterflies

by A.S. Harmer. Illustrated by A. D. A. Russworm. Hardback, 200 x 285 mm, including 12 pages of colour photographs and 84 colour plates illustrating variations of British Butterflies. ISBN 0 9537236 0 7. Paphia Publishing Ltd, 2000. Available at £55 inclusive of UK postage from the publishers at Covertside, Sway Road, Lymington, Hants SO41 8NN.

This is a beautifully prepared book which is printed throughout on high quality paper with hardback cover and a dust jacket. The quality of the paper and layout of text and illustrations results in text which is easy to read and good quality reproduction of photographs and paintings. It is compiled in three sections.

The first section contains a biography of the (now) late Don Russworm who painted the illustrations of butterfly aberrations for this and two earlier major books on British butterflies. His interest in butterflies started about 1916 at the age of 12 and spanned some 85 years. This account will obviously appeal particularly to those who knew him personally. However I am sure most enthusiasts will enjoy reading a record of his career, how this influenced his interest in butterflies, some of the superb butterfly habitats in which he collected and the way in which he developed his painting skills over a large part of the 20th century.

The second section contains an excellent description of the theory of genetics and contains sufficient detail for those interested to appreciate the mechanisms involved in producing a wide range of variations, including those which are sex-linked. The theory is backed up by practical examples of aberrations occurring in nature based on breeding experiments which demonstrate a range of genetic principles. Included are colour photographs of some extreme live aberrations found in nature and also examples of those produced artificially by temperature experiments. The last part of this section gives practical advice on breeding from aberrations found in the field.

Finally we come to the the third section which accounts for about half the book, the paintings of butterfly aberrations. This comprises 84 plates containing over 400 paintings of the most extreme aberrations found amongst butterflies in Britain. These are a fine tribute to Don's skills and will be appreciated by butterfly enthusiasts everywhere. If you don't buy it now put it on your list as a must for a future "present"!

Reg Fry

The Amateur Entomologists' Society

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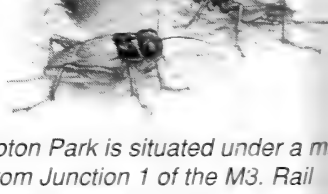

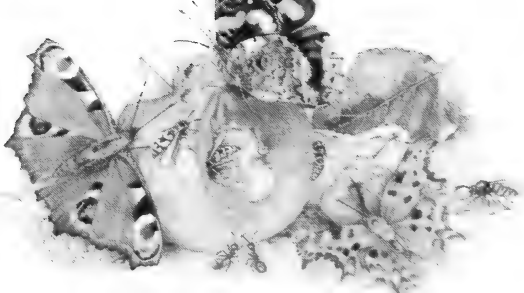

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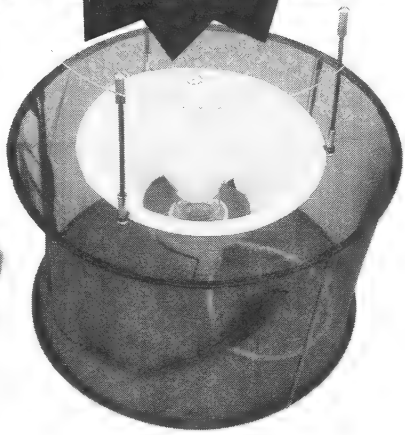

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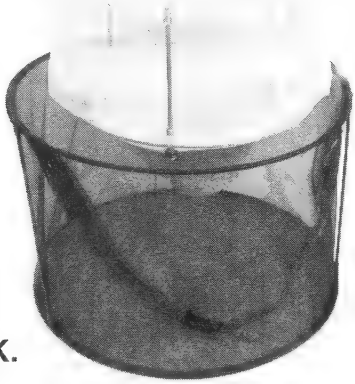

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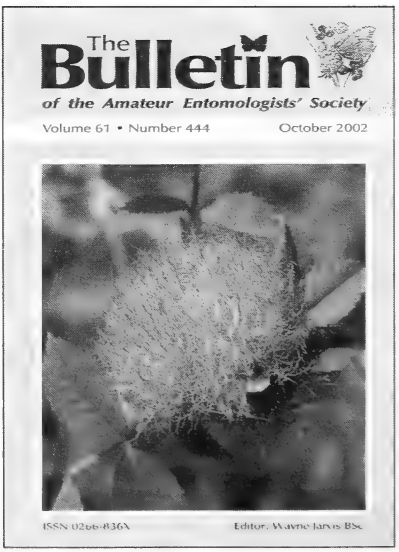

Photo: Nick Holford.

The cover of the *Bulletin* features the Rose Bedeguar Gall or Robin's Pincushion.

This gall is caused by the hymenopteran gall wasp, *Diplolepis rosae*. In the spring the female lays eggs in the unopened buds of the Dog Rose, *Rosa canina*. The resulting gall contains up to 60 wasp larvae, each in its own chamber. It is a very attractive gall, appearing like a ball of moss. It can be brightly coloured. The base colour is green, but this may give way to pink, to crimson, to reddish brown. The larvae overwinter in the gall and pupate. The adults emerge in May. The term Robin's Pincushion has old origins and refers to Robin Goodfellow. Bedeguar tea was used to cure diarrhoea in cattle.

The Bulletin
of the Amateur Entomologists' Society

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The AES Annual General Meeting and Member's Day, (20th April 2002)

Dr Peter G. Sutton (7388)

AES Habitat Conservation Officer, 2 Fir Tree Close, Flitwick, Beds. MK45 1NZ.

The AES Annual General Meeting was held on the 20th of April 2002 at the London Zoo meeting rooms in Regent's Park. It was a glorious day, and the trees, which were in full blossom in the parks and avenues of London, looked spectacular against the azure-blue sky. Members who arrived on foot, were greeted by brightly painted canal boats as they walked over the Grand Union Canal bridge into Regent's Park, and on towards the Zoological Gardens.

The London Zoo meeting rooms (the Bartlett Room) provided an excellent venue for the AGM, with full conference facilities. Members began to arrive shortly after the doors opened at 10.00 am, and the meeting room was soon filled with lively conversation as refreshments were taken.

Bug Club members (some of whom could hardly contain themselves!) filed off to see the talk on Tarantula's that had been laid on for them, and at 11.00 am, after the welcoming address in the conference theatre, the other planned events of the day began to unfold.

The first lecture was given by Matt Shardlow (Director of Conservation: "Buglife" – The Invertebrate Conservation Trust), in the form of a Powerpoint presentation, describing the "Insects of Conservation Importance on RSPB Reserves", and also provided details of the newly formed Invertebrate Conservation Trust.

Matt explained the significance of RSPB nature reserves in terms of their value as refuges for wildlife; the diversity of habitats represented; and the biodiversity present on reserves; and also explained some of the difficulties associated with trying to conserve species in fragmented habitats. It was refreshing to see that the RSPB clearly recognised that invertebrates were key indicators of the health of ecosytems in any particular habitat, and that by developing strategies for the successful management of habitats for invertebrates, a positive "knock-on" effect

was observed for many other species present. Matt included specific examples of this, including how management for a particular species of bumblebee in Scotland had contributed to the success of Corncrake populations. In addition, the importance of RSPB reserves for invertebrate fauna was discussed, and a number of slides, including a fantastic picture of the recently rediscovered Maid of Kent, *Emus Hirtus* were shown.

At 12.00pm, the AES Council proceeded with the Annual General Meeting, which was followed by lunch at 12.30pm. Members made full use of their free entry into London Zoo, and spent time wandering around the various sites within the Zoological Gardens. There was also a restaurant and other food outlets, and a souvenir shop. The meeting reconvened at 2.00pm.

The second lecture was another Powerpoint presentation given by Barry Yates, from Rye Harbour Nature Reserve. Barry spoke about the importance of the reserve for invertebrates, and also about the Anglo-French collaboration: the Two Bays Project, between Rye Harbour and the Baie de Somme. The problems concerning the conservation of species such as the RDB1 weevil, *Limobius mixtus* on the reserve were highlighted, and some of the conflicts that have arisen as a result of trying to conserve endangered species within the same habitat were also discussed. These problems led to the formulation of a conservation policy on the reserve that advocates the creation of mosaics of habitat in order to maintain maximum biodiversity at the site. This strategy has benefited populations of many rare species, including the Flea beetle *Dibolia cynoglossi*, which is found only on the equally rare Red hempnettle.

The presentation also included some remarkable moving video footage of species such as the RDB1 carabid, *Omophron limbatum*, and some of the superb moving video footage of beetles that was presented has now been added to the Coleopterist web-site: www.coleopterist.org.uk

The importance of the site for water beetles such as the Great silver water beetle *Hydrophilus piceus*, the diving beetle *Dytiscus dimidiatus*, and many other species of invertebrate, including the threatened Medicinal leech *Hirudo medicinalis* was highlighted. Barry also provided details of an important new method which he developed at Rye Harbour for trapping invertebrates in shingle, which led to the discovery of a new species of Scuttle-fly, *Megaselia yatesi*.

After the afternoon tea break had been taken, the final lecture was presented by John Walters, who gave a video presentation of the

extraordinary variety of insect species which can be found in the county of Devon. This included a number of species from the (EN) Scarce Ground Beetle Project, which John is working on with Dave Boyce. (Members may remember the excellent and well-illustrated presentation given by Dave Boyce on the Scarce Ground Beetle Project at last year's AGM). John provided some unique footage of species such as the Blue ground beetle *Carabus intricatus* (a very rare RDB1 species which was thought to be extinct in the UK some years ago) including its voracious larva eating a Tree slug. There was also footage of the Dune tiger beetle *Cicindela maritima*, and our most spectacular carabid, *Carabus nitens*, which showed the jewel-like qualities of this dazzling iridescent species.

Other species shown included the endangered metallic green ground beetle, *Drypta dentata*, filmed in the same habitat as the rare tiger beetle *Cicindela germanica*, and *Broscus cephalotes*, an aggressive carabid which is generally found in coastal habitats. More unique video footage, this time of the rare ground beetle, *Pterostichus kugellani* was shown, including the previously undescribed larva of this species, and its metamorphosis to the adult beetle, illustrating the whole process of metamorphosis, from the emergence of the white adult, through the process of expanding soft pronotum, elytra and wings, to the development of colour and the final "hardened" beetle over a period of 12 hours. John also showed video footage of the Narrow bordered bee hawk moth in Rhos pastures in Devon, the courtship display of the Rufous grasshopper, full emergence of the Brown hairstreak butterly from pupa, the Wasp spider, *Argioppe bruennichi* spinning its elaborate egg cocoon, and much more!

After a final round of questions from the audience, the meeting was closed at 4.15pm. All in all, the AGM and Member's Day proved to be an illuminating day at an excellent venue, and on behalf of the AES and its members, I would like to sincerely thank the speakers for their excellent presentations. Many thanks also to those who were involved in helping with the AGM, and last but by no means least, the AES would like to sincerely thank members and junior members for making the day such an enjoyable one.

Next year the AGM will be held at the Natural History Museum and if all goes to plan, the AGM will alternate between these two venues from now on.

News from the Forums

by Reg Fry (2333)

The AES is currently involved in running three forums on the internet for discussing all things entomological. The first of these at:- http://groups.yahoo.com/group/aes/ is restricted to AES members only. The second at:- http://groups.yahoo.com/group/Breeding_UK-Leps/ is for anyone who is specifically interested in breeding UK lepidoptera and finally the third has a worldwide membership and is principally used by non-members to ask questions about insects and their identification.

There have been a wide range of debates on the AES forum. As an example one of these started with a member who wanted some ideas for providing habitats for beetles and other species feeding on "rotting wood". This was soon extended into suggestions for ways of supporting solitary bees and wasps in both wood and sand based habitats. A full record of this debate can be downloaded as a pdf file from the files area of the forum and we await the results of members experiments – and hopefully successes with the enormous range of species these habitats support.

There were several discussions relating to the *Bulletin* and the difficulty in persuading members to write the range of articles needed to make up six quality *Bulletins* a year. In consequence members compiled a list of suggestions for the range of articles they would like to see included. I hope the following list (not in order of preference) will encourage a lot more members to contribute to the *Bulletin* in future.

Topics suggested by forum members for future *Bulletin* articles:

* UK sightings – anything "special" (locally or nationally); anything seen early or late...
* Annual Reports from groups of County recorders.
* Rearing tips – small articles that promote rearing insects for beginners – my favourite breeding cage is one example. The emphasis needs to be on encouraging beginners but also getting people to broaden their interests to other, less studied, groups. Whilst there are handbooks available on most orders these articles could bring things up to date with the experiences of members and could also promote the sale of AES handbooks.
* Field-craft tips – how to stalk, how to use moth and malaise traps, where to look, what equipment to use... Possibly a Questions and answer section on this topic?

* Features such as 'My Garden", "My favourite Habitat", "My best/worst day."
* News from Abroad (including holidays) – medium/short articles detailing where good things have been found, special features of the habitats and tips on getting there, working out there and what you can expect to find. Legal restrictions on collecting/exporting.
* Dedicate a page per *Bulletin* on an endangered species how to find and identify with pictures if necessary.
* What's going on on the Internet – useful sites, YahooGroup snippets etc.
* Letters to the editor / debate about current issues on insect conservation etc. (the latter could go in *ICN*).
* Book reviews – as exists now (these should be restricted in length particularly for books with a very limited appeal).
* In this month 50 years ago – summarise what entomologists were talking about in the *Bulletin* 25/50 years ago.
* Reprints of some of the earlier *Bulletin* articles.
* Longer articles – broader-scope, multi-page articles on various subjects. Examples might be based on particular groups of insects or families.
* Beginners guides to the study of .....

Studying Aquatic Invertebrates – A Beginners Guide

by Craig Macadam (11277)

109 Johnston Avenue, Stenhousemuir, Larbert, Stirlingshire, FK5 4JY.
email: info@ephemeroptera.org.uk

The thought of tackling a new group, not to mention a whole new ecosystem often fills the enthusiast with horror and empties the wallet or purse at an alarming rate! In this article I hope to show that studying aquatic invertebrates does not necessarily require expensive collecting equipment.

I first began studying aquatic invertebrates at the age of 10. I would collect freshwater shrimps (*Gammarus* sp.) from a local stream and keep them in any available container to study them. This used to drive my mother daft as she found that her pans, jars and plastic containers had disappeared to the outhouse!

I've since learnt that, believe it or not, there is an International Standard (ISO 8265) which details how to collect invertebrate samples from flowing water and the type of nets to use.

Whilst there is a plethora of professional nets on the market, I would recommend two inexpensive types of net for the beginner. An aquarium net is ideal for collecting all the freshwater invertebrates. By holding the net downstream of the area to be sampled the riverbed can be disturbed with your feet and any invertebrates are dislodged to drift into the waiting net. The fine mesh ensures that none of the organisms are missed. The down side of this net is that it also collects any debris and silt that is present on the riverbed. The fine mesh clogs rapidly and is not suitable for slow moving sections of river. It is however, ideal for medium to fast running streams, if you take care of the handle which is too flexible for fast, heavy flows. This net can also be used as a sweep net to catch invertebrates in bankside vegetation or flying insects as they swarm over the water. **AQUARIUM NET: £2.95**

The second net I recommend is a plastic kitchen sieve! It is strong and durable, and has a mesh which traps most organisms while not collecting too much of the river bed material. Most sieves come with a hole for hanging in the kitchen but this also doubles for attachment to my waistcoat. **PLASTIC KITCHEN SIEVE £0.59**

Sorting Equipment

Once you have caught your sample, you will need to sort out the invertebrates from all the other detritus collected in the net. The best

method for this is to transfer the sample into a large bowl, bucket or other container. From here the organisms can be transferred in to a large white tray.

I use either a plastic bucket from the local DIY store or a large Tupperware container. The bucket allows more water to be added which helps in separating the living matter from the detritus. The Tupperware container is smaller but I find that it fits easier into the boot of my small Peugeot as it competes with pushchair, shopping, etc. Various sizes and shapes of plastic containers come in handy for separating different species of invertebrates.

PLASTIC BUCKET: £1.59

TUPPERWARE CONTAINER: £0.99

Once the sample is in the bucket/container I decant small amounts into a large white tray. White is by far the best colour as it makes it much easier to spot the movements of even microscopic organisms. I use a 12" white flowerpot "saucer" – with no holes in the bottom of course! The ridges on the saucer allow you to move the sample around the tray in a fashion similar to gold panning.

12" FLOWERPOT SAUCER: £2.99

To facilitate the movement of organisms from the tray to separate containers I use a variety of instruments. I have used small plastic medicine spoons to remove organisms but these can be cumbersome. I now use a basting pipette from one of the many kitchenware catalogues that fall through my letterbox. When you need to move an organism you just need to squeeze the bulb of the pipette, place the mouth over the organism and let go of the bulb. The organism is lifted into the body of the pipette where it remains until you squeeze the bulb again. Simple!

BASTING PIPPETE: £2.99

Transporting your Catch

Once you have isolated the organisms you are interested in you will need a method for transporting them back to your house or some other location for identification.

I use three different types of container. 35mm film containers are ideal for moving invertebrates. They fit easily in the pocket – I carry several with me wherever I go, they are freely obtained from any shop who develops photographs on their own premises, and they are virtually water tight, although every so often I use one which springs a leak!

The only drawback with film containers is that they are usually opaque. If you want to view your catch without removing it from the container then they are practically useless. In this case I make use of empty, glass, baby food jars. They are watertight, transparent and a handy size. The characteristics of nymphs, larvae and other aquatic organisms can be viewed easily, while adult flies can be viewed similarly.

Upwing flies are particularly interesting to observe as they are unique amongst insects in that they have two stages which are winged. The intermediate form between nymph and fully mature adult is called a sub-imago (or dun) and the adult a "spinner". The transformation from the dull upwing fly dun into a shiny spinner is a magical sight, well worth watching, and is easily viewed in a baby food jar.

As the dun usually transforms during the night it is best to place your specimen in the jar, with several twigs, and place the jar in the fridge overnight. This delays the transformation and allows you to view the whole spectacle during the day. You must however take care that your jar is thoroughly dried to ensure that the delicate wings of the fly do not get damaged. It is not clear why the upwing flies have retained this unique step in their lifecycle, however it is thought that they may not be able to achieve the anatomical changes from nymph to sexually mature adult in one step.

Jars of baby food are available from most chemists and supermarkets, however if you don't have a young child who provides you with a regular source of these jars, then don't worry – some of the flavours are quite nice on toast! I don't recommend the Hawaiian Chicken though! Finally, if you don't fancy the thought of Chicken Casserole on toast then you could try charming your local pharmacy into supplying you with some plastic sample bottles. These small bottles are ideal for holding small larvae or adults and are strong enough to withstand the rigours of the freshwater environment.

35mm FILM CONTAINERS £0.00

BABY FOOD JARS: £0.54 each

30ml PLASTIC SAMPLE BOTTLES £a smile!?

Once you have your specimen you will need to identify it. An essential tool for this task is a magnifying glass. Hand lenses can be obtained in a variety of magnifications and materials however I would recommend the beginner to use a plastic model with a magnification of 10 times. Always remember to tie a piece of brightly coloured ribbon or wool to your hand lens so that if you put it down in grass or other

vegetation you find it again easily. Hand lenses can be obtained from craft shops or specialist entomological suppliers.

10× HAND LENS: £5.10

If you can get your hands on a copy of the Collins Field Guide to Freshwater Life by R. Fitter and R. Manuel it can be used to ascertain what family your specimen belongs to. The book is split into the main groups of invertebrates and is an excellent introduction to freshwater life. Unfortunately, the Collins guide is now out of print but the AIDGAP key to Freshwater Invertebrates will at least allow you to check which group your specimen belongs to. In addition, I would recommend the Waterside Guide and Trout Flies of Britain and Europe, both by John Goddard. Both books include photographs of the majority of adults which aids identification of your specimens, however there are less pictures of the larvae, instead, text descriptions are provided.

The Freshwater Biological Association publishes scientific keys for identification of many groups of aquatic invertebrates to species. If you are confident in using a taxonomic key and have access to a stereo microscope with a magnification of between 20 and 100 times then these are the keys for you. The keys usually also hold a host of ecological information which is indispensable to the serious aquatic entomologist.

FRESHWATER LIFE (R. Fitter): £12.95 (out of print)

A KEY TO THE MAJOR GROUPS OF BRITISH FRESHWATER INVERTEBRATES (AIDGAP – P.S. Croft): £6.95

WATERSIDE GUIDE (John Goddard): £7.95

TROUT FLIES OF BRITAIN AND EUROPE (John Goddard): £19.99

FRESHWATER BIOLOGICAL ASSOCIATION KEYS: £12.00 each (approx.)

The Freshwater Biological Association covers a wide range of freshwater topics as well as entomology, while the Royal Entomological Society has an Aquatic Insect Special Interest Group that meets once a year.

FRESHWATER BIOLOGICAL ASSOCIATION
The Ferry House, Far Sawrey, Ambleside, CUMBRIA LA22 0LP. Telephone: 015394 42468. www.fba.org.uk

ROYAL ENTOMOLOGICAL SOCIETY
41 Queens Gate, LONDON SW7 5HR. Telephone: 0207 584 8361. www.royensoc.co.uk

Further Advice

Unfortunately, there is no specific institution, association or society that is dedicated to the study of aquatic invertebrates. There are however, a number of recording schemes where advice can be sought and records can be sent.

Ephemeroptera Recording Scheme – Mr C. R. Macadam, 109 Johnston Avenue, Stenhousemuir, Larbert FK5 4JY. www.ephemeroptera.org.uk

Trichoptera Recording Scheme – Dr I. D. Wallace, Keeper of Invertebrate Zoology, National Museums and Galleries on Merseyside, William Brown Street, Liverpool L3 8EN.

Balfour-Browne Club (Water Beetles) – Dr G. N. Foster, 3 Eglinton Terrace, Ayr KA7 1JJ.

Heteroptera – True Bugs (aquatic species) – Mr T. Huxley, The Old Manse, Pitcairngreen, Perthshire PH1 3LR.

Neuroptera – Alderflies and Spongeflies – Mr C.W. Plant, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Odonata – Dragonflies and Damselflies – British Dragonfly Society, Dragonfly Recording Network, Mr S. Cham, 24 Bedford Avenue, Silsoe, Bedfordshire MK45 4ER.

Urban Magpie moth colony

by M. A. Spencer (10316)

I remember when I was young child, I was forever searching almost anywhere for insect livestock to rear and to study, a favourite species to search for especially in winter was the Vapourer moth *Orgyria antiqua* (Linn.) which could sometimes be found as egg covered cocoons under the lintels of walls or window ledges. It was while doing such a search that I found my first Magpie moth *Abraxas grossulariata* (Linn.) larva on an old dusty *Euonymous japonica* hedge in the centre of town. The hedge grew in the tiny front garden of an old terraced town house above and over a low wall and alongside the pavement. I made numerous visits after that day and collected all stages of this species there at one time or another, including two different kinds of parasite.

Since those times, I have grown this shrub in the garden for years in the hopes of getting a colony of this species to live there, but to no avail, in fact since those times I have only ever seen the odd single specimen near scrub in open country. I always look for livestock for sale of this species but have yet to see it anywhere.

More insects of an Aberdeenshire farm

by Arthur W. Ewing (10355)

Wester Duncanstone, Insch, Aberdeenshire, AB52 6YX.

In a previous article I described the ground beetle fauna of an Aberdeenshire farm (OS Map Reference, NJ5626) and suggested that my findings were typical of the area. The situation regarding the insects associated with water is quite different. There is an almost total absence of standing water as the tradition of the village pond has never existed here and most of the small bodies of water on farmland have long since been drained. In 1990 when my wife and I bought the farm the only water present was in two drainage ditches one of which was well vegetated and the other clear with a fast flow of water. There were also some small, stagnant, semi-permanent ditches. We had a pond dug with some financial aid from the Nature Conservancy Council (now Scottish Natural Heritage). This was situated in an area of damp ground close to the larger of the two ditches. The pond was fairly shallow, *c.a.* 1.5 metres at its deepest, and around 400 square metres in surface area. Willows were planted to the North and West and within a few years formed an effective screen while dense beds of Bulrush (*Typha latifolia*) and the Bottlerush (*Carex rostrata*) soon developed round the sides along with two large clumps of Yellow Flag (*Iris pseudacorus*). These were derived from local stock to avoid the likelihood of introducing exotic species of insect. A second deeper pond of about the same size but with steeper sides was dug alongside a few years later. This was mainly for wildfowl and is kept clear of emergent vegetation. The difference in the two ponds with regard to their suitability for aquatic insects has been very obvious. Very few species have colonised the latter, deeper pond and of those that have, none are absent from the shallower one.

I thought that it would be interesting to compare the fauna of the ponds and their associated vegetation with that of the pre-existing habitats. Water beetles and bugs are capable of dispersing long distances and can therefore colonise new localities quickly. It is interesting in this respect to note the large numbers of water beetles found in light traps and also attracted to reflective surfaces such as car bonnets and black polythene covers. To my knowledge the only bodies of standing water within around 10 km. of the farm are two estate ponds, both of which I have examined and found to be disappointingly lacking in aquatic life. One appeared to be almost bereft of invertebrates possibly because of runoff from sheep dip.

Aquatic insects were collected mainly by using a net but in addition I used three traps in the ponds. These took the form of floating inverted funnels leading to reservoirs in which the insects accumulated as they rose to the surface for air. It is necessary to empty these traps, daily if possible, as many of the beetles and their larvae are highly predaceous. Pondside vegetation was sampled with a sweep net. While I did some collecting as the ponds became established, most of the records are from 1999 and 2000.

I will deal first with the aquatic and semi-aquatic beetles of the families Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Helophoridae and Hydraenidae. Table 1 lists all of the species recorded to date and comprises 34 species. Of these 10 have been found exclusively in the newly created ponds and and can fairly confidently be classified as colonists. Another 13 species have been found both in the ponds and elsewhere on the farm while 11 have not so far been found in the ponds. Of the latter the Hydrophilids, Heliophorids and Hydraenids are mainly hydrophilid rather than truly aquatic. *Hydroporus ferrugineus* and *H. longulus* are not resident on the farm with single specimens having been collected from water troughs set out for the livestock, a very productive source of specimens. Both species are relatively uncommon (Nb) and the former is particularly interesting in that it is normally found in subterranean waters and I have no idea where the specimen came from.

Of those species collected exclusively from the ponds two are of particular interest. *Platambus maculatus* is an extremely common and widespread species usually found in well-oxygenated waters such as rivers. It is to be found at the inlet of the pond in quite large numbers and it is a mystery how it arrived as it is a flightless species which I have failed to find in the ditch which provides water to the pond. *Stictotarsus multilineatus* is more typical of highland lochans and is a new record for Aberdeenshire. However I have collected it on three occasions so it is unlikely to be an adventitious finding. Time will show if it has become truly resident.

Disappointingly no dragonflies have yet appeared to stay although I did have a sighting of a Black Darter (*Sympetrum danae*). However the damselflies, the Common Blue (*Enallagma cyathigerum*), the Emerald (*Lestes densa*) and Blue-tailed (*Ischnura elegans*) have colonised the ponds and are all relatively common and are breeding. Also present is the Large Red Damselfly (*Pyrrhosoma nymphula*) but this more an insect of the vegetated ditches and probably predates the digging of the ponds.

Table 1. Beetles collected from aquatic habitats at Wester Duncanstone farm.

		Column 1	Column 2	Column 3
Haliplidae	*Haliplus fulvus*	X		
	Haliplus lineatocollis	X		
	Haliplus wehnckei		X	
Dytiscidae	*Hydroporus discretus*			X
	Hydroporus ferrugineus			X
	Hydroporus incognitus		X	
	Hydroporus longulus			X
	Hydroporus nigrita		X	
	Hydroporus obscurus		X	
	Hydroporus palustris		X	
	Hydroporus planus		X	
	Hydroporus pubescens		X	
	Ilybius ater	X		
	Ilybius fuliginosus		X	
	Platambus maculatus	X		
	Nebrioporus elegans = *(Potamonectes depressus elegans)*	X		
	Stictotarsus duodecimpustulatus	X		
	Stictotarsus multilineatus = *(Potamonectes griseostriatus)*	X		
	Agabus bipustulatus		X	
	Agabus guttatus			X
	Agabus nebulosus		X	
	Agabus sturmi			X
	Colymbetes fuscus	X		
	Dytiscus marginalis	X		
	Hygrotus inequalis	X		
Gyrinidae	*Gyrinus substriatus*		X	
Hydrophylidae	*Anacaena globulus*			X
	Hydrobius fuscipes			X
Helophoridae	*Helophorus brevipalpis*		X	
	Helophorus flavipes		X	
	Helophorus grandis			X
	Helophorus obscurus			X
Hydraenidae	*Hydraena britteni*			X
	Limnebius truncatellus			X

Column 1: Beetles collected exclusively from the ponds.
Column 2: Beetles found both in the ponds and in other locations.
Column 3: Beetles found in bodies of water other than the ponds.

I also collected the water bugs and a list of species identified is shown in Table 2. All of these species except for *Velia caprai* are characteristic of lentic (i.e. still) waters and were collected from the ponds. *Velia* was found both in the running ditches and from the ponds.

Table 2.
Water bugs (Hemiptera, Heteroptera) recorded from the ponds at Wester Duncanstone.

Hesperocorixa sahlbergi
Arctocorisa germani
Callicorixa praeusta
Sigara nigrolineata
Sigara distincta
Sigara dorsalis
Corixa punctata
Notonecta glauca
Gerris lacustris
Gerris thoracicus
Velia caprai

It would be of relatively little interest to list all of the Coleoptera found in the vegetation in and around the ponds and ditches. However some are worthy of comment particularly among the Chrysomelids and Scirtids. One of the most interesting discoveries was of a population of the Chrysomelid, *Psylliodes laticollis* in the ditch feeding the ponds and also in the shallower of the two ponds. This small, metallic blue jumping beetle is associated with Watercress, *Nasturtium officinale*. This constitutes not only a new record for Aberdeenshire but previous Scottish records have all been south of the Edinburgh / Glasgow divide, some 200 Km. away (Cox, 1998). Subsequent to the discovery, the ditch was unfortunately dredged thus destroying the habitat. I will be interested to see if the ditch is recolonised by beetles from the pond once the Watercress regrows.

Two further Chrysomelids appeared on the willows and aspens planted by the ponds, *Chalcoides fulvicornis*, a beautiful golden beetle and *Phyllodecta vitellinae*, also beautiful but much less welcome. The latter is now found in huge numbers, particularly on aspen, and is capable of damaging the trees. The last species of interest is the reed beetle *Plateumaris sericea* which I swept from Bottlerush on whose roots the larvae probably feed. It is known to be attracted to the flowers of Yellow Flag of which there are several large clumps. This beautiful beetle, although widespread in Scotland has not been found recently in Grampian region and I am hopeful that it will become established here (Menzies and Cox, 1996, Foster, 2001).

The Scirtidae are not the most glamorous or attractive beetles and are a relatively neglected family. One of their disadvantages is that it is very difficult to identify them to species without recourse to dissection and a knowledge of German. The keys in Joy (Joy, 1932) to the species of *Cyphon* are totally inadequate. However it is perhaps with such neglected groups of insects that the amateur entomologist can make a contribution. Butterflies, moths and dragonflies may be attractive and appealing but their study is an overcrowded area and your chances of making worthwhile novel observations on them is small. However there are families of Coleoptera, Hymenoptera and Diptera for example where our knowledge of even basic facts of their distribution and biology is woefully inadequate.

Cyphon species are small (2-4mm) beetles which can be swept from foliage, usually around water. I have found them feeding on sallow blossoms in spring. Their larvae are rather like woodlice in appearance and are frequently to be found in the organic detritus in ditches and other damp places. Around the ponds I have collected four species. One of these, *Cyphon laevipennis* (=*C. phragmiteticola*), has, like *Psylliodes laticollis*, not been recorded previously north of the Scottish Borders (Foster, 2001) . Another Scirtid, found on the vegetation in one of the ditches but not near the ponds, was *Elodes minuta*. Again, this species has only been recorded in Scotland from the border region (Foster, 2001). I am sure that the discovery of these species so far outside their recorded geographical range is not due to their rarity. Rather it reflects a lack of recording effort in conjunction with the difficulties of accurate identification. By contrast the likelihood of my finding a breeding colony of a butterfly or macrolepidopteran on the farm new to Aberdeenshire is vanishingly small.

I have only dealt with the aquatic bugs, a few families of beetles and the damselflies. In terms of species numbers there are likely to be an even larger number of mayflies, caddisflies, two-winged flies (Diptera) and other insects which have taken the opportunity, provided by the digging of the ponds and the consequent growth of waterside vegetation, to increase their ranges, but an investigation of them will have to wait.

There are a number of general points that I would like to make. The first to reinforce the plea for people to study some of the less popular groups of insects. Admittedly there are problems of identification but on the other hand the potential rewards are greater. In perusing the entomological literature over the last few years I have noted with interest the many papers on discoveries of new regional and national

records for Diptera in Scotland. This has been due to a large extent to the efforts of members of the Malloch Society who are clearly exploiting a productive niche.

A second point, which I have made previously, is to encourage collecting from what might seem unlikely localities. The few examples that I provide from the farm suggest this to be a worthwhile strategy. It is tempting and wholly understandable to concentrate on habitats known to be host to rarities but how many opportunities for making useful observations are passed on the way? What is very obvious is the patchy nature of insect recording over the country particularly for the less popular orders. The late A. M. Emmet published results for the numbers of species of microlepidoptera recorded from each of the British vice-counties up to May 2000. The second highest total for Scotland was South Aberdeenshire (VC92) with 497 species: The 28th was Kirkcudbrightshire (VC73) with just half that number, at 237. Wigtownshire (VC74) with only 178 species came fourth from the bottom of the league. While these figures reflect the published records, anyone who has collected from all of these areas as I have will know that these figures are unlikely to be an accurate indication of the actual situation. Hopefully, though, they might encourage collecting from the south-west of Scotland. The major factor is probably that there are in Aberdeenshire knowledgeable and enthusiastic resident lepidopterists who appear to have no equivalents in the south-west. It is interesting in this respect to examine the recent Atlas of Scottish Water Beetles where the opposite pertains with most records in the south-west and the numbers decreasing as one moves away from the area. It is maybe no coincidence that the author of the report, Professor G. Foster, lives in Ayr. However the pattern almost certainly to some extent reflects actual distribution of species abundance. I should be very surprised if pattern for microlepidoptera was not ultimately shown to be similar.

Finally there is the question as to what the best strategy is for encouraging invertebrate wildlife. It has been stated that habitat creation as opposed to building on existing features is not the most productive approach (Kirby, 2001). This really depends on the timescale one is considering and on the habitat. In my previous article (Ewing, 2001) I dealt with the groundbeetles on the farm and I think it is very unlikely that there is any practicable way in which I could change their habitat so as to increase the number of species present. We have, over the last ten years, planted around 15,000 trees the majority of which are broadleaves along with some hedging plants such as Blackthorn and Hawthorn. There are no large areas of broadleaf

woodland in the neighbourhood and probably due to this that I have identified very few insects which are making use of this new habitat. With the current emphasis on creating native woodlands one should be aware that in the short term at least, they will not necessarily contribute much to insect biodiversity. This is not, of course, the only reason for planting trees. As far as cost effectiveness is concerned the creation of a pond is probably the most worthwhile short term strategy for encouraging wildlife both invertebrate and vertebrate.

Acknowledgements.

I am grateful to Michael Cox, Garth Foster and Thomas Huxley for confirming and correcting some of my beetle and water bug identifications. The Nature Conservancy Council provided a grant towards having the first pond dug and for some tree planting.

References.

Cox, M.L. (1998). The genus *Psylliodes* Latreille (Chrysomelidae: Alticinae) in the U.K.: with keys to the adults of all species and to the larvae of those species feeding on Brassicacae. The Coleopterist, 7(2), pp. 33-65.

Ewing A.W. (2001) The insects of an Aberdeenshire Farm. AES Buletin, 60 (436), pp.97-100.

Foster, G.N. (2001). Atlas of Scottish Water Beetles. *Scottish Natural Heritage Commissioned Report* F96AC337.

Joy, N.H. (1932). A Practical Handbook of British Beetles. 2 volumes. Reprinted E.W. Classey Ltd., 1997.

Kirby, P. (2001). Habitat Management for Invertebrates. UK Joint Nature Conservation Committee.

Menzies, I.S. and Cox, M.L. (1996). Notes on the natural history, distribution and identification of British reed beetles. Br. J. Ent. Nat. Hist., 9(3), pp.137-162.

New records of the ladybird *Epilachna argus* (Geoffroy, 1785) in Middlesex

Dr Peter G. Sutton (7388)

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Further to the article published in the last edition of the *Bulletin*, it has come to light that the recent UK colonist, the Bryony ladybird, *Epilachna argus*, was discovered in Middlesex prior to the dates which have been reported thus far (in: Prance, 2001; Sutton, 2002).

Mr James Ranger, who discovered this species at Kempton Park racecourse on the 25th of May 1999, very kindly provided me with the details of these records during the AES Exhibition at Kempton Park on the 5th of October. This information included correspondence to Dr John Sloggett, who had also found specimens of the Bryony ladybird in 1999, at Hampton Wick (near Bushy Park) in Middlesex.

The specimens at Kempton Park, of which about a dozen were observed, were found sunning themselves on stinging nettles in the company of the 7-spot ladybird, *Coccinella septempunctata*. Noticing that there was something unusual about these ladybirds, voucher specimens were collected by Mr Ranger and sent to Dr Mike Majerus, who identified them as the Bryony ladybird. Dr Majerus passed these specimens on to Dr Sloggett (who has a particular interest in this species), who was then working at the Department of Genetics at Cambridge University. In subsequent correspondence, Dr Sloggett reported that he had recorded this species at Hampton Wick in May 1999.

Mr Ranger has since found the Bryony ladybird on it's foodplant, White bryony, *Bryonia dioica*, at Kempton Park (9.v.00, 11 adults; 30.v.00, 10 adults; 27.vi.00, 50+ larvae). It was also revealed in correspondence that in 1945, Mr Ranger made another very interesting discovery when he found a specimen of the ladybird, *Halzia decemguttata*. This ladybird, which is not considered to be a native British insect, was found on Poplar in the grounds of the British Natural History Museum, where he used to work.

Acknowledgement

I would like to sincerely thank Mr Ranger for generously imparting the above information.

References

Prance, D.A. (2001). *Henosepilachna argus* (Geoffroy) (Coccinellidae) in Middlesex. *The Coleopterist*, **10**, p.4.

Sutton, P.G. (2002). The Bryony Ladybird *Epilachna argus* (Geoffroy, 1785), a recent UK Colonist. *Bull. Amat. Ent. Soc.*, **61** (No 443), pp. 161-164.

Historical Scottish Records of Glow-worms

by Craig Macadam (11277)

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email: info@ephemeroptera.org.uk

To the entomologist, the thought of poring over dusty tomes in libraries may not sound like their idea of fun. However, the New Statistical Account of Scotland published in 1845 provides a wealth of information on the insect fauna of 19th Century Scotland.

The New Statistical Account of Scotland, was the second in a series of three accounts published between 1791 and 1992. The purpose of these accounts was to record the state of each parish in Scotland "by the scientific survey of its physical qualities, by inquiries into its past history and situation, and by the close investigation of its actual state, industrial, social and moral".

Today, this account is an extremely important source of information. The account is based on detailed parish reports describing agriculture, industrial productions, population and lastly (and most importantly!) the natural history of Scotland.

In this article I have pulled together the records for one species – *Lampyris noctiluca* – the European glow-worm. I have reproduced the text exactly as it was published in 1845, so in places the language is quite flowery, but highly entertaining!

Inverary, Argyllshire

"The entomologist may be richly rewarded here for his toils. Every stone gives shelter to some tiny inhabitant; every shrub and flower has its own gay visitant; the sun shines at noon on swarms of *Papilios* in full splendour of costume; the evening is welcomed by the silent gliding of the *Phalaenae*; and the *Lampyrus noctilucus* (or glowworm) avails herself of the darkness of night to set forth the attractions of a phosphoric garb."

Dunoon and Kilmun, Argyllshire

The glow-worm is frequently seen in the autumn evenings, frequenting sheltered banks along the public roads, and appears to have predilection for soft herbage, as it retreats are in the neighbourhood of marshy grounds.

Ardchattan, Argyllshire

The glow-worm is not uncommon.

South Knapdale, Argyllshire
Lampyris noctiluca - listed as one of the rarer insects of the parish.

Tongland, Kirkcudbrightshire
"The 'refulgent lamp' of the glow-worm is often visible. On hot moist evenings I have seen multitudes of these beautiful insects scattered like "sparkling gems" over our meadows. From a bog, about a mile from the manse, I have frequently brought a plentiful crop to my garden, which, for many nights after their transportation, they would continue to illuminate. I had thrown seven one night into a grass plot in front of my house, and was such amused, next evening, at the alarm of one of my servants, who rushed suddenly into my room, exclaiming, that the grass before the door was 'in a bleeze'. The poor woman, who never in her life had seen so many glow-worms, has some reason for her apprehensions, as many a 'bleeze' is less brilliant than the lustre of these earth born pleiades."

Portpatrick, Wigtonshire
The glow-worm is found plentifully in the glen north of the town.

Langholm, Dumfries-shire
The glow-worm (*Lampyris splendidula*) is common in this parish, and is generally seen at the roots of hedges and on road-sides.

Minto, Roxburghshire
Lampyris noctiluca (said to have been once observed).

Hawick, Roxburghshire
Lampyris noctiluca.

Ruthven, Forfarshire
I know not whether it is worthy of notice, as an ornithological fact, that a pure white swallow was seen here, some summers ago; or as an entomological fact, that the glow-worm has been found in the parish.

Kincardine in Monteith, Perthshire
It may also be proper to mention the glow-worm here, which the writer has found in a warm sheltered locality near the manse. This beautiful visitant, however, is but seldom seen here.

Crichton, Edinburgh

In the little glen which the Castle of Crichton overhangs, great numbers of glow-worms are to be met with in summer; and the admirer of these beautiful creatures would visit this spot in the twilight of the evenings, in the months of July and August, he would find himself amply rewarded in the brilliant display of shining lamps which the little illuminati of the glen are ever and anon beaming out around him. The month of July seems to be the period when the lights which they emit are the most striking and beautiful. After that time, they gradually become fainter, towards the end of August and beginning of September, are extinguished for the season."

Borthwick, Edinburgh

The glow-worm, which has probably been seen by but a few of the inhabitants of the neighbouring metropolis, and which is not often met with in Scotland, is one of the most attractive objects to persons who occasionally visit our valley in search of what is beautiful and rare. During most of the summer evenings it may be seen in considerable numbers along the valley which intervenes between the castles of Borthwick and Crichton – although from the extensive drainings which have lately taken place in this glen, the worms are less abundant than they were in former years. Their beautiful greenish light among the dewy grass or by the sides of the footpath, never fails to awaken the admiration of all observers, and would form a treat worthy of a visit on purpose – were it not that the later hours of the evening are the only time for witnessing the sight – to a great many persons, who have never actually witnessed one of the most lovely spectacles presented by the minuter works of nature; though there are few persons who have not some pleasing impressions gained from reading, and especially from poetic description with this phenomen.

The glow-worm (*Lampyris noctiluca*), when seen by daylight, is a short and thick worm of a dingy and by no means inviting appearance. No person would suppose from its daylight aspect, that its brilliancey during the later hours of evening could be so beautiful. The light, which the worm has the power to extinguish at pleasure, proceeds from three whitish-coloured rings towards the extremity of the body – the luminous matter is a yellow substance contained in vesicles – when these vesicles are removed entire, they shine for some time – but when lacerated they are speedily extinguished. The worm can at any time extinguish its light, when it is handled or put into a state of fear.

These worms begin to shine in the month of June, and may be seen till September. I have remarked that they are seen in greatest numbers on misty and warm evenings. They put out their lights between eleven and twelve at night. If they are put under a glass cover they give light, within doors, for several weeks – they gradually deposit the luminous matter and die.

The male is a dingy coloured scarabaeus, and may be seen on every stalk of grass on which the light of the female is shining. The light, besides its extreme beauty, is a remarkable provision of Nature afforded to so unlikely a creature – and so far as we understand for such a purpose.

Finally, if you are interested in finding out more about glow-worms there is an excellent book on glow-worms in the UK. You can obtain a copy by writing to author, John Tyler at Tadorna, Bradbourne Vale Road, Sevenoaks, Kent TN13 3DH, enclosing a cheque for £10.00 made payable to John Tyler. Alternatively, you can read the text only version on the UK Glow-worm Survey website at www.glowworms.org.uk

References

Aitken, Rev. D. (1845). The New Statistical Account of Scotland. Minto, Roxburghshire. **3**: 361.

Barty, Rev. P. (1845). The New Statistical Account of Scotland. Ruthven, Forfarshire. **11**: 414.

Cunningham, Rev. J.K. (1845). The New Statistical Account of Scotland. Crichton, Edinburgh. **1**: 57.

Fraser, Rev. H. (1845). The New Statistical Account of Scotland. Argyllshire, Ardchattan. **7**: 11.

Gray, Rev. A. (1845). The New Statistical Account of Scotland. Kincardine in Monteith, Perthshire. **10**: 1254.

Mackay, Rev. M. (1845). The New Statistical Account of Scotland. Dunoon and Kilmun, Argyllshire. **4**: 138.

Mackenzie, Rev. A. (1845). The New Statistical Account of Scotland. South Knapdale, Argyllshire **7**: 261.

McMillan, Rev. J. (1845). The New Statistical Account of Scotland. Tongland, Kirkcudbrightshire. **4**: 1

Shaw, Rev. W.B. (1845). The New Statistical Account of Scotland. Langholm, Dumfriesshire. **4**: 418.

Smith, Rev. C, and Campbell, Rev. D. (1845). The New Statistical Account of Scotland. Inverary, Argyllshire. **7**: 11.

Urquhart, Rev. A. (1845). The New Statistical Account of Scotland. Portpatrick, Wigtonshire. **4**: 138.

Wallace, Rev. J.A. (1845). The New Statistical Account of Scotland. Hawick, Roxburghshire. **3**: 384.

Wright, Rev. T. (1845). The New Statistical Account of Scotland. South Borthwick, Edinburgh **1**: 161.

HCO Diary notes: Pilch Field, Buckinghamshire

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Pilch Field in Buckinghamshire (Grid ref: SP 749 321) is a site which could easily be overlooked as nothing more than a field with a few cows, so what is so special about this field? A closer look at this site quickly reveals a floral diversity that can mean only one thing; it has escaped the deep ploughing methods that have been a ubiquitous feature of modern agricultural practice. Consequently, Pilch Field has retained its original soil structure, and in addition to the remarkable number of plant species present, which include the Bee orchid, *Ophrys apifera*, Green-winged orchid, *Orchis morio*, Salad burnet, *Poterium sanguisorba*, and Cowslip, *Primula veris*, it possesses a large community of invertebrates, which includes that other resident of unimproved meadow grassland, the Yellow meadow ant, *Lasius flavus*. Some of the large mounds that have been produced by these small yellow ants represent centuries of toil, and have doubtless provided a home to all number of myrmecophilous invertebrates during that period. (For those who may be interested in studying the extensive array of invertebrate species which are known to reside within the nests of British ants, from the larvae of Blue butterflies such as the Large Blue, *Maculinea arion*, to the Northern rose chafer, *Potosia cuprea*, then the standard work, "*The guests of British ants, their habits and life-histories*" by H. St. J.K. Donisthorpe (1927) provides essential reading.)

Pilch Field is in fact a pair of ancient meadows and a small triangular field. The two ancient fields are marked with a medieval ridge and furrow, and the whole site represents an isolated island of past biodiversity in a modern agricultural landscape. The site is managed by Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT), primarily for its botanical interest, by grazing with cattle, and details of this site can be found in their *Where to go for wildlife...* publication (2000).

On the day that I visited Pilch Field (11.vi.02), the weather was marked with showers and occasional warm sunny spells. As I stepped over the stile into the first small triangular field (which was about the size of a large townhouse garden), I immediately noticed the richness of the grasses and flowers. I also rued my lack of knowledge of the Diptera, as I observed a number of new species feeding at rose and bramble blossoms. As ever at this time of year, the longhorn beetle, *Grammoptera ruficornis*, was present in large numbers on these blossoms, and several specimens of the Cardinal beetle, *Pyrochroa serraticornis*, were observed.

I made my way into the first ancient meadow, and saw a small herd of black cattle grazing in the distance. Having once been chased through a bramble bush by a large horned mammal, I did my usual gender check, and deciding that no threat was posed by the very young bulls that were present in the field, continued on towards the medieval ridge. The Cowslips in the meadow were on the wane, and the Green-winged orchids had long since gone, but in their place were hundreds of Early marsh orchids, *Dactylorhiza incarnata* and Common spotted orchids, *Dactylorhiza fuchsii*, growing among the meadow grasses. As I looked closely at one of these grasses, the delicate Quaking grass, *Briza media*, I encountered a Silver ground carpet moth, *Xanthorhoe montanata* among the grass stems.

The weather began to fold, and I made my way to the shelter of the large Oak trees at the side of the meadows. Plenty of Scorpion flies, *Panorpa communis*, were flying among the brambles, and a blue species of Lacewing, which I have yet to find the identity of, was also present. The rain stopped as soon as it had begun, and was replaced by hot beaming sunlight, which increased the humidity of the field and caused steam to rise from the grasses. As I continued to search for new species, a party of Rooks flew into the trees above and began calling loudly. They had been disturbed, as I was, by an over-zealous character who was taking pot-shots at virtually anything that moved in the next field. Not that I minded, but it's somewhat difficult to concentrate when you're constantly expecting half a pound of grape-shot to come whistling past your ear.

The rain had been quite heavy, so I continued to search among the grasses for signs of life. A remarkably blue female of the Common Blue, *Polyommatus icarus*, was observed, closely followed by a Burnet companion, *Euclidia glyphica*, which had settled in front of a fresh Bee orchid, Orange moth, *Angerona prunaria*, and Blood-vein moth, *Timandra griseata*. The pink borders of this latter

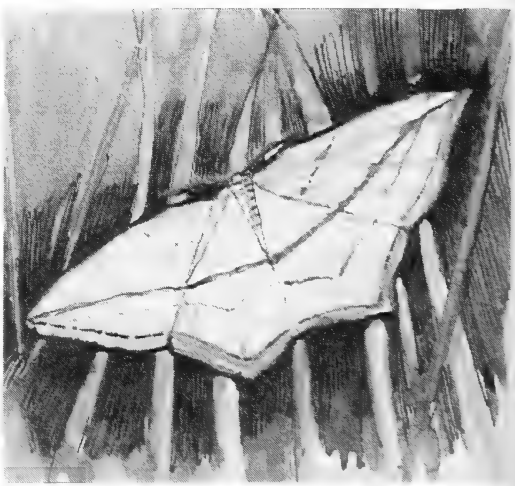

Figure 1. Blood-vein *Timandra griseata*.

species were far more colourful than I have seen in any book illustration, to the point of being fluorescent. I spent some time photographing these species, and as I took my last shots of the Bloodvein, I looked up to see that an inquisitive young bull had quietly positioned himself practically above me. I could **practically** feel it's hot breath, which was quite disconcerting until it wandered off. Still, it made a change from policemen, who usually take a lot of convincing that sticking your backside in the air whilst burying your head in the grass is part and parcel of any naturalist's remit. At this point, a large male Emperor dragonfly, *Anax imperator*, appeared, swooping for insects as they flew above the flowers and grasses, and I returned to the vertical to begin an unsuccessful pursuit.

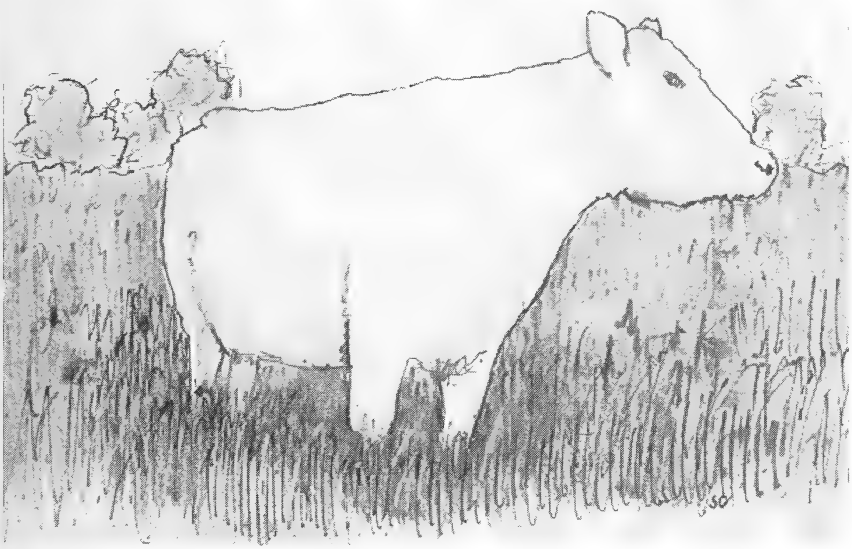

Figure 2. Inquisitive young bull.

At the far end of the meadows were many wet flushes, which were generally found by accident as I walked through the long grass. There were also many Common blue damselflies, *Enallagma cyathigerum*, flying among the Ragged robin, *Lychnis flos-cuculi*, and a congregation of Large white butterflies, *Pieris brassicae*, flying in this part of the meadow. A very boldly marked Speckled wood butterfly, *Pararge aegeria*, was also observed. This was the Spring form, the first brood of the year, and unlike the later brood, the spots on the edge of the lower wings are fixed in large patches of yellow, producing a far more

striking insect. This is a species, like the Comma, *Polygonia c-album*, that we tend to take for granted in England and Wales, and yet both of these species were considerable rarities at the beginning of the 20th century. (The history of the dramatic fluctuations of both species is given in "*The Millennium Atlas of Butterflies in Britain and Ireland*" by Asher *et al.* (2001).)

Again I was struck by the number of fly species in these ancient meadows, and there were also many bumblebees feeding on the profusion of buttercups and clover, but to my recollection, only a handful of Honey bees, *Apis mellifera*. Where had they all gone? It is true that Honey bees have suffered greatly at the hands of the Varroa mite, *Varroa jacobsoni*, but I did expect to see a few more. (The Varroa mite, which was first discovered as a parasite of certain Asian bees (Oudemans, 1904), is now a cosmopolitan pest, which has had a significant impact on "feral" colonies of Honey bee in the UK. Although bee-keepers have had some success treating mite infested domestic colonies, there has been little sign of recovery in European feral populations of Honey bee. However, there has been some anecdotal evidence that some feral colonies in France have shown signs of recovery (Sanford, 2001).)

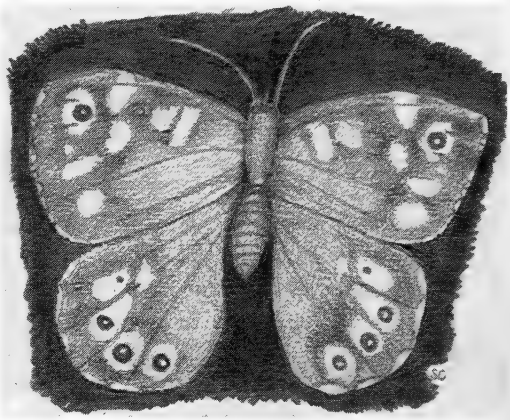

Figure 3. Speckled Wood, *Pararge aegeria*.

One of my early recollections of entomological interest concerned the discovery of a cylindrical piece of honeycomb. I can remember being quite excited by this find, and was extremely impressed by the symmetry of the comb and it's hundreds of cells, which I studied for some time before wandering home to show my parents. When I got home, I showed this wonder of nature to my mother, telling her how and where I had located the honeycomb, and she replied, "I'm sorry to tell you this darling, but it's actually the dried remains of a well-eaten sweetcorn cob." I couldn't believe it... hoodwinked by an al fresco cast-off that had been casually lobbed over somebody's garden fence!

On the way back up the field I saw several more Bee orchids, and a multitude of insects which included many Meadow grasshopper

nymphs, *Chorthippus parallelus*, and Common groundhoppers, *Tetrix undulata*. During my time wandering through these ancient meadows, I cannot say that I saw anything of real rarity as far as invertebrates go, but there was more to this ancient place than a collection of names and sketches in a notebook. To walk among the orchids of Pilch Field was to step back in time and imagine the way things once were, with it's Green woodpeckers visiting the Yellow meadow ant mounds, and the myriad of butterflies and other insects that flew among its flowers and grasses. There are few areas left where that privilege can still be had.

Figure 4. Burnet companion *Euclidia glyphica*

Acknowledgement

I would like to sincerely thank Sara Challinor for providing the illustrations for this article.

References

Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G. and Jeffcoate, S., (2001), *The Millennium Atlas of Butterflies in Britain and Ireland*, Oxford University Press, Oxford.

BBOWT (2000), *Where to go for Wildlife in Berkshire, Buckinghamshire and Oxfordshire*. Nature Conservation Bureau Ltd., Newbury, Berkshire.

Donisthorpe, H. St. J.K., (1927), *The guests of British ants, their habits and life-histories*, George Routledge and Sons Ltd., London.

Oudemans, A.C., (1904), On a new genus and species of parasitic acari. Notes. Leyden Museum, **24**, pp.216-222.

Sanford, M., (Ed.), (2001), *APIS, The Florida Extension Beekeeping Newsletter*, **19**, No.2.

Getting started

by Fiona Merrion Vass

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Working my way through the beetle (Coleoptera) Dichotomous Keys text and illustrations in order to identify beetles to species level for my first college research project was one of the hardest things I have ever done. The text and illustrations were supplied mainly by N. H. Joy, *A Practical Handbook of British Beetles* (1932). Joy supplied me with all the clues I needed literally staring me in the face as it were, to solve the 60 jars of black preserved nightmares that at the time to a total beginner resembled clones. If you've ever heard of the phrases "thrown in at the deep end!" or "baptism by fire", you'll know exactly what I mean.

I think an explanation is in order before we go any further. Up until five years ago the only direct contact I'd had with invertebrates was on my vegetable patch in the garden or removing ticks from the dog. I think it must have been a keen interest in organic gardening that opened my eyes to the changes man has made to the landscape over the centuries. That left me with lots of questions such as why do you find small woodlands on the tops of hills, and why are there so many different species of plants?

So at the age of 34 I decided to enrole on a BSc Honours Degree in Wildlife Management. For this course I had to complete two theses, one at the end of year two the other end of year three. My first choice of project was to study *Vespa vulgaris* (common wasp) at Southampton docks which was out of the question due to health and safety so plan B was to study *Carabidae* (Coleoptera) on agricultural land in South Warnborough Hampshire. I decided on the classic grid pattern for my pitfall traps in a barley field and an adjacent area of land that had been set-aside for one year. The assigned project was only to last two months but I collected the traps morning and evening to amass as much data as possible considering the short trapping period and to allow for comparisons of data. A total of ten species and 472 individuals were trapped. Hence the jars of nightmares I nicknamed my little black shadows, due to it taking me five hours to identify my first Carabid *Pterostichus madidus* – do I detect the sound of laughter? You haven't heard the best bit yet, if it wasn't for Nick Holford and our long telephone conversations as he tried – very patiently I might add, to talk me through the key I still would have been there now with beetle number one!

Originally I think I found the terminology difficult as it changed with the author of the key, and I was constantly looking up various words in the dictionary. Lots of the beetles were very or slightly battle scarred which made identification difficult and the more I looked at the beetles the more differences I saw!

It was also the first time I had used a microscope, the setting up of which is an art in itself! I only had the summer break to trap, identify and write up the project. I think you could say panic set in, which led to lots of late nights as I had my son to entertain during the day, and it was also his summer holidays. He was only five at the time so you couldn't exactly leave him to amuse himself, although he was very keen and helped with collecting samples and writing labels for the collecting jars. To my surprise, getting up early to collect the samples from the fields became a pleasure instead of a chore. Just as the sun was rising, you could hear the ears of the corn cracking as they absorbed the heat of the sun, and we watched the hares we disturbed bound off into the distance. We were regularly watched by a hare we nicknamed the peek-a-boo bunny who would watch us two or three tram lines away jumping up and down in the crop!

I used a 70:1 dilution of alcohol in the traps which I thought would kill the beetles, but in the early hours, as I was concentrating on one particular specimen trying to find out if the deflexed margin of the elytra was crossed, I was holding the beetle on its side with tweezers when its back leg twitched. Then it wriggled to right itself, at which point I nearly fell back off my stool! It was a real shock as I had been sitting there working quietly for about three hours without hearing a sound or seeing a movement. This happened a few times but I was better prepared and placed the beetles into a recovery pot outdoors. There seems to be a lot of invertebrate trapping, some say too much, particularly with pitfalls as a discriminate sampling method. If the species caught are not needed by the researcher, should they be saved or sent to a central collecting agency to be determined at a later date? If not who knows what scheduled or migrating species could be discarded in error!

The *Unwin AIDGAP key to Families of British Beetles* published by the Field Studies Council ISBN 1 85153 166X was the first book I read to gain a basic understanding of the variety of body forms I would encounter. The key is subdivided into several sections that speeded up identification of the more abundant species I expected to find on agricultural land.

The book I used the most was *Common Ground Beetles* by T. Forsythe, Naturalist Handbook number 8, ISBN 0 85546 263 9. This is a very easy book to read and the key is easy to follow, priced at around £10.00 – a bargain buy. The reader is introduced to the basics in Ground beetle identification such as threadlike (filiform) antennae and the 555s (five segments on each tarsus); accompanied with extensive anatomical illustrations it is a perfect book for beginners.

The only shortfall is that more than one species can be keyed out at the same couplet, so you may need to refer to C. H. Lindroth (1974) *Handbooks for the Identification of British Insects* Volume IV part 2, if you intend to determine your specimens to species level.

Completing two voluntary work placements during my degree helped further my identification progress tremendously (at the Forestry Commissions Research Station, Alice Holt, Farnham and Hampshire County Councils Museum Service, Chilcomb House in Winchester). At Alice Holt I identified *Carabidae* (Coleoptera) samples taken from Caithness, whereas at Chilcomb House I undertook a complete collections management programme involving the re-determination /identification of some 300+ specimens of *Elateridae* (Coleoptera). I laid them out in checklist order in a "Hills" cabinet and created a database to allow dissemination of recorded information to the National Recording Scheme for that group. During these placements I met some lovely people who oozed infectious enthusiasm for their chosen field. This put me at ease considering I was a novice had been entrusted with re-determining and re-housing a life's worth of collecting. My heart missed a beat occasionally during the early part of the project, as some specimens were loose in the box and legs either fell off or were missing – but I soon became a dab hand at re-matching and gluing on various misplaced appendages.

If you are interested in identifying insects, why not contact your local museum service to see if they run introductory courses on entomological identification or if they have open days where invertebrate collections are open to the public? You could seize the opportunity to view specimens down a microscope and see what you're missing, you never know you may get hooked just like me!

Entomology is a fascinating hobby that I thoroughly enjoy since my first view of *Elaphrus cupreus* under high magnification (although I've never come across it in the field, nor do I have a specimen for my collection).

The joys of moth trapping

by Tony Steele (4106)

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As a member of numerous wildlife groups in Kent, and a very keen "moth-er", I venture out many times each year recording the county's moths. This is a short account of some of my past experiences.

Trapping deep in the countryside, especially in woodland, can be an experience. Apart from moths, the bright light of the trap can attract other wildlife, for example, mice and toads, which are frequent visitors. Once when I was trapping in the Darenth Valley a drunk arrived, obviously lost and trying to find his way home. On another occasion at the same site, the police turned up. Apparently, they had reports that Badger digging was taking place, but once I explained what I was doing, and showed them the trap and a selection of moths, they went on their way.

Certain localities can have their own problems. At Church Wood, West Kingsdown, and Dene Park Wood near Tonbridge, bats are very numerous and at times troublesome, taking moths just as they are about to enter the trap. As I visit these localities regularly, I'm sure they have learnt that the light means an easy meal! Another frequently trapped location is Hemsted Forest near Sissinghurst, and here it is the large Wood ants that are a real nuisance.

Several times when shining my torch along a woodland ride I have seen eyes at various heights above the ground, and so far I have identified foxes, cats and deer. A couple of times something big has moved through the undergrowth, and I would imagine (or hope!) it was a deer or possibly a badger. Luckily, I have yet to encounter wild boar, which is supposed to be found in parts of Kent.

Whilst trapping in woodland near Badgers Mount, I had a most puzzling experience. I had left the trap running and was wandering round the wood and upon returning I was surprised to see a large black animal near my car, which as soon as I shone the torch at it, ran off at a fast speed. To this day I'm not sure if it was a stray dog or one of the so called large cats. Weather can also cause problems. What had started out as a perfect mothing night has a couple of times ended in heavy rain, and on one occasion an un-forecast hard frost descended, and the sheet on which the trap was sited froze solid, as did my feet!

These are just some of the things that have occurred when I've been out moth trapping. I could have included the many flies swallowed,

getting stuck in mud, forgetting equipment, and the mosquitoes, but they are another story. What makes it all worthwhile is when such rarities as Waved black, Lace border, Broom tip and White-banded carpet turn up. Such are the pleasures of mothing!

Global warming?

by Roger Hayward (2769)

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January and February 2002 were, entomologically, literally a washout here. The poor weather, coupled with an absence of two weeks, meant that no trapping took place and that therefore the earliest species were missed, as is so often the case.

March was little better, with few records and no unusual species. In fact the weather was so unsuitable that no trapping took place between the 8th and the 22nd. However, that month did produce a few unusually early records. Among the *five* species of macros on the 3rd were both *L. hirtaria* Cl. (Brindled beauty) and *B. strataria* Hufn. (Oak beauty). It is unusual to see these two splendid moths together and that is my earliest date for the former. Among the seven species on the 23rd was an early *S. dentaria* Fabr. (Early thorn). At the end of the month, while gardening on the 31st, I was surprised to see a fresh male specimen of *X. fluctuata* Linn. (Garden carpet) at rest on the north-facing wall of the house. Its presence was entirely natural, as the moth trap had not been run for over a week because of a cold snap. I ran the trap that night and among the seven species of macros attracted was a *P. clavipalpis* Scop. (Pale mottled willow).

The beginning of April brought more precocious moths. Two nights later (2nd April), on a mild but breezy night, nine species were attracted to light, including a single very early *A. rumicis* Linn. (Knot grass). The night of the 3rd was still but clear, bringing ten species but fewer specimens. Among these was a late *A. aescularia* D.&S. (March moth), a single *O. luteolata* Linn (Brimstone moth), equalling my previous earliest record, and an early *A. puta* Hb. (Shuttle-shaped dart).

Oak gall collection

by Gordon Brown

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I am writing in the hope of gaining the help of the members of the Amateur Entomologists' Society, to collect material for my work.

We are researching a group of wasps from the family *Cynipdae*, the oak gall wasps. As entomologists you may have heard of them, as some of the species are common and widespread in the UK. These wasps are unusual in the Hymenoptera as they parasitise plants and, even more so, because the resulting galls are very specific in structure and site on the tree.

This tight relationship with the oak trees allows us to consider the spread of similar, closely-related species that rely on different host-species of oak. The spread of oaks across Europe from their southern refugia, after the end of the last ice age, occurred at different rates for different oak species. This gives us the opportunity to look at how genetic diversity changes in "invasions" of different age.

Over the past decade or so, people in the group have studied several of the gall wasps and I am currently working with one of the ancient expanding species, namely *Cynips quercusfolii*. I have already built up a sizeable genetic dataset from collections made over the last few years, across the breadth of Europe, by members of the research group and with the invaluable support of the British Plant Gall Society.

This autumn, I am hoping to gather a more complete collection to represent the UK so that my data are comparable to the other species worked on. This will add a valuable facet to the grand picture that is developing. It is in this collection that I hope your members will lend their assistance. Ideally I am looking for collections of around 50-100 galls from as many sites as possible around the UK. The galls first appear in late summer and the adults emerge in the autumn, so collections should be made in the last fortnight of October. As the galls can be very numerous in very localised patches, the more people you have looking during the short window of opportunity, the more chance there is of making a good collection.

I have information and images that I am compiling into a fact sheet on how to find and package the galls. I can distribute this e-mail or post to interested members individually, if this would be most suitable. I would also be pleased to refund the cost of sending the galls to us.

Epiphyas postvittana (the Aussie invader)

by Phil Robinson (11865)

88 Hales Road, Wednesbury, West Midlands WS10 9BS.

It was June 1997 when I first caught a medium sized light and dark brown Tortricidae at my m.v. light trap. Living in a pre-council terrace with established fairly large gardens. Planted with plenty of deciduous shrubs and trees, it was no surprise to catch a member of this family, having already caught Garden rose and Chequered fruit tree tortrix *etc.*

But having no real information on this group at the time apart from *Collins Guide to Insects* I was stuck.

I consulted my brother, Gareth, who lived in Rushall, Walsall. Gareth, a keen "moth-er" for the last umpteen years had just acquired both secondhand copies of *British Guide to Tortricoid Moths Volumes I and II.* Flicking through pages of Volume I we paused on Plate 32. There in four forms was *Epiphyas postvittana* (Light brown apple tortrix) – it matched! The text stated it was an Australian species first recorded in the British Isles in 1936 (Newquay, Cornwall) feeding on various trees, shrubs and flowers, although in Australia it was a serious pest of apple trees.

Nice record for a town garden I thought, as I added it to my list (which currently stands at 185 micros, 270 macros and 20 butterflies). On that no more was mentioned until the following year.

1998 came with the usual warm/wet winter and spring, which provided me with my first spring, summer and autumn records of *E. postvittana* – sometimes 20 plus on summer nights!

Dave Grundy, a local countryside ranger and moth trapper with Walsall Council was informed of my catch. He too, was experiencing *E. postvittana* at his home garden in Birmingham. So it seemed that *E. postvittana* was spreading from the south-west because Gareth who was in Rushall a few miles north, (about four as the crow flies) had not trapped a single specimen.

By 1999/2000 it had exploded to fifty plus on summer nights, with overall year counts of over 1000 specimens coming in all forms and sizes. The large impregnated females were quite willing to lay their sticky mass of green eggs once boxed. Now for the first time, Gareth was also trapping his first records of the Light brown apple tortrix in Rushall.

E. postvittana now holds the record with the Common plume moth as the only two moths having been recorded in every month of the year in my Wednesbury garden.

2001 has had a slightly lower count of the Light brown apple, probably due to the poor overcast summer. But don't get me wrong, as I write this they are still going strong this year (November).

Has anybody else experienced this seemingly massive count elsewhere? I would like to know.

A word of warning to you in the north and east – *Epiphyas postvittana* is coming to a garden near you!

Moths in the bathroom

by Mike Brown (11834)

13 Millfield, Thornbury, South Gloucestershire BS35 1JL.

Having long wanted a m.v. moth trap but not being able to justify the cost (paying a mortgage, feeding the family *etc.* take priority), I decided last July to start leaving the bathroom light on all night.

This would also, I reasoned, help to satisfy my seven-year-old's rapidly developing interest in the subject. Seeing him play with plastic models illustrating a butterfly's life cycle to the point where he Blu-tacks the caterpillars to the ceiling to simulate their pupation, made me realise that he needs to see more real life specimens if his interest is to grow. It would also give me added reason to get up in the middle of the night to visit the bathroom.

I persuaded my wife that these educational possibilities would outweigh her natural fear of "creepy crawlies" and as she's very tolerant (despite anything the size of a Silver Y being "huge" in her opinion), she agreed. Of course, there are countless nooks and crannies in the bathroom where a moth can hide. So despite thorough searching every morning, there's always the chance than when she takes a shower the following day, a Yellow underwing or two will be disturbed from the shower curtain and whizz past her ear.

The bathroom is on the first floor and adjoins a medium-sized garden. The window is quite large (1.5m square) but it is hinged at the bottom and when open, the gap at the top is a mere 13 cm. So I suspect that what flies in is but a small sample of what has actually reached the window.

To minimise the chance of re-capturing the same individuals night after night, I release the night's capture the following evening, round the front of the house. I use Skinner's guide but there have been many where identification has proved too difficult (pugs and certain Noctuas in particular) so rather than take a "best guess", I have not recorded these, nor the micros.

So here's a list of the 39 species which turned up (first date only where the species occurred more than once:

13th July	Small blood-vein
	Riband wave
	Swallow-tail moth
	Yellow shell
14th July	Silver Y
	Common quaker
	Dark arches
15th July	Scalloped oak
16th July	Bright-line brown-eye
	Purple thorn
18th July	Large yellow underwing
	Garden carpet
	Heart & Dart
	The pheonix
19th July	Single-dotted wave
	Small fan-footed wave
21st July	Common rustic
	Mother of pearl
	Marbled beauty
	The clay
	Broad-bordered yellow underwing
24th July	Cabbage moth
25th July	The spinnach
26th July	Marbled green
28th July	Mottled beauty
3rd August	Brimstone moth
10th August	The spectacle
17th August	Foxglove pug
21st August	Square-spot rustic
23rd August	Green carpet
4th September	Orange swift
7th September	Lesser yellow underwing
14th September	Common marbled carpet
17th September	Large ranunculous
28th September	Bordered beauty
1st October	Lunar underwing
5th October	Angle shades
15th October	Red-line quaker
21st October	The chestnut

The Purple Thorn on 29th July was a female which duly laid around 30 eggs, and these were bred through to produce 16 pupae by early September. I'd assumed these would overwinter but they all hatched soon afterwards – from these, I have bred another generation and as I write, the first three have pupated. They are kept in the garden shed and I hope that, at long last, the lower temperatures of November will prevent them hatching before the spring.

The Bordered beauty also laid about 25 eggs and these should hopefully hatch next April.

In praise of *Verbena bonariensis*

by D. K. Dunkin (1487)

11 Blakes Avenue, New Malden, Surrey.

In the Autumn of 1999, I ordered seeds for sowing in the following spring from a well-known firm and included *Verbena bonariensis* as an experiment!

It was described as a half hardy/semi-hardy perennial. But I failed to notice that the species achieved the height of five feet or so. I assumed it was a variation of the annual *verbena* so attractive to summer moths!

I used a propagator and planted the seedlings out in May according to ritual!

It grew energetically, producing tall spikes of long-lasting purple coloured flowers. These attracted various species of butterflies, bees, hoverflies, etc to my small urban garden, the flowers competing successfully with Buddleia and Scabious etc. But the idea that the rough leaves might have some potential in keeping at bay some of the cats which infest my gardens was a hope unfulfilled (alas!).

The other feature was that the plants also attracted neighbours who begged for seedlings. (The species produces good material for flower vases and related purposes.)

In the Autumn of 2000, I mindlessly packaged seed heads with a number of "Butterfly Scabious" seeds (which I never yet succeeded in propagating) in a small plastic bag and left them in my conservatory. And forgot them!

In 2001 last year's plants survived much to my surprise! The seeds packaged in plastic sprouted without assistance in March and, as a result, both the front and back gardens became bedecked with *Verbena bonariensis*. A number of plants were self-sown! As soon as their flowers appeared, they became popular with local insect populations!

The first sighting was a Small tortoiseshell (*A. urticae*) on 15th July, followed later by the three common "Whites", Gatekeepers (*P. tithonus*), Comma (*P. c-album*), Meadow Brown (*M. jurtina*), Essex skipper (*T. lineola*), Speckled Wood (*P. aegeria*), and the Red admiral (*V. atalanta*). The final sighting was of a Red admiral on the 1st November, with further sightings of this species on Buddleia *globosa* x *davidii* on the same day!

But the icing on the cake was a flock of goldfinches (*C. carduelis*) feeding on *V. bonariensis* seed on the 4th November followed by a further visit by these beautiful birds a few days later.

Verbena bonariensis is now a favourite feature of my garden!

New alternate foodplant for stick insects?

by M. A. Spencer (10316)

I know that bramble (blackberries) are a readily used and available foodplant for stick insects, but short of the thornless varieties I think they leave a lot to be desired. The monstrously vicious hooked thorns aside, that put as many holes in cage netting as they do in fingers, the quality of this foodplant in winter can often be very poor (being raggedy and rather tough).

The easily grown "natural" foodplant for many species is *Eucalyptus*, but this can be too large and vigorous for many people's gardens. It doesn't keep too well in water and can be even tougher than brambles in winter time.

With all this in mind, some years ago, I waited till I had a large number of newly hatched nymphs of an easy species and then I collected leaves from every different species of evergreen shrub, tree and plant that I had in the garden and tried them on the nymphs to see if they would eat any of them.

Few were accepted at all with the notable exception of a shrubby *Hypericum*, known as *Hypericum* Hidcote. They loved it! Since then I

have reared several species of stick insect on *Hypericum* as this variety seems to keep fresh for a long time in water, it is very easy to grow (and propagate), has no thorns at all, grows fast, is hardy and the quality of the leaves in winter is often very good. The only species I keep regularly now is the New Zealand Prickly *Acanthoxylla prasini* which I find is quick and easy to culture all year around and doesn't spend forever in the egg stage (usually a maximum of three to six months). The only secret to this species' success is to give them good ventilation, put netting on top of a plastic container and you can scarcely fail, put them in an enclosed plastic box and they will quickly die.

I haven't tried other types of *Hypericum*, but they probably would do as well, however stick insects seem to be like caterpillars, in that once started on a foodplant it is difficult to change them later, so if you mean to experiment with new foods, start them when they first hatch.

Garden butterfly oases and bird predation

by Nick Brown (9289)

31 High Street, Stalbridge, Dorset DT10 2LL.

On the 14th September 2001 I was rewarded with the site of half a dozen Small tortoiseshells lazily frolicking around some clumps of Red valerian I had introduced into a local limestone wall. I was not so elated, a moment later, when I observed a Pied wagtail with one of the fluttering nymphalids in its mouth. The bird removed the helpless creature's wings with dextrous incision and, presumably, consumed the nutritious bodily parts. I was unable to spare the time to watch the outcome of this event, only to notice that the wagtail returned to the foot of the wall, its attentions focused on the activity around the flowers, its intentions only too clear.

Bird predation of butterflies amassed in gardens is not unknown. It has been previously reported in the *Bulletin* and other references in the case of buddleia, the culprits being Blue tits, and I have also witnessed this case once myself. Should we stop providing favourite

nectaring plants for butterflies in our gardens considering this danger? I would suggest not, because although the clustering of these colourful enchanters around summer blooms is a common occurrence, the systematic destruction of them at these oases appears fairly rare.

One is prompted to question why birds do not more frequently take advantage of such an easily advertised source of food. Perhaps the answer lies in their habit-forming behaviour. I notice that when I intermittently throw out kitchen waste for the birds, they do not always immediately find it. But when I provide food on consecutive days the birds quickly learn and are ready waiting for the next day's cache. The clustering of butterflies is a similar circumstance; it depends on the capriciousness of the weather, and on the cycles of hatchings and immigrations which vary from week to week and month to month. It certainly isn't a daily happening. Therefore the predators never establish a reliable feeding pattern. I also notice that the garden birds are far more eager to accept household handouts in winter, when natural sources of sustenance are scarcer. Butterfly congregations tend to form in summer and early autumn when other food sources are abundant.

I did make one further morbid discovery during my visit to the limestone wall. Suspended in the fatal silken snares of an invisible geometry, lay the neatly incarcerated body of another unfortunate tortoiseshell, its vital fluids being syphoned away by the tenant Garden spider. Experience has taught me that butterflies are as likely to end their lives in the artifice of an arachnid as in the beak of a bird.

A visit to the Dordogne, France, May 2001

by Tony Steele (4106)

57 Westfield Road, Barnehurst, Kent DA7 6LR.

After several holidays to Europe in which we flew to our destination, the opportunity arose where we were able to take a driving holiday. After careful consideration, the Dordogne area was chosen because apart from the scenery, it is reputedly a very good area for butterflies. We set off on Saturday 12th May for one week, taking the Channel Tunnel. As we kept off the major routes, the journey through France was an experience, due to some bad road signing in places.

We eventually arrived at our destination Souillac, which is approximately 144km south of Limoges. After checking into our hotel we had a walk around the village to get our bearings. The first butterfly encountered was a Scarce swallowtail (*Iphiclides podalirius*), followed by Speckled wood (*Pararge aegeria*), Small white (*Pieris rapae*) and Clouded yellow (*Colias crocea*). The next day a visit was made to the cliffside village of Rocamadour with its houses built onto, and sometimes into, the cliff. As we left Rocamadour a valley nearby was seen and upon exploring it we recorded Small blue (*Cupido minimus*), Brimstone (*Gonepteryx rhamni*), Clouded yellow, and a first for us, Cleopatra (*Gonepteryx cleopatra*). On the way back to the hotel we stopped at the riverside hamlet of Gluges and here was recorded Brown argus (*Aricia agestis*), Grizzled skipper (*Pyrgus malvae*), Red admiral (*Vanessa atalanta*) and Orange tip (*Anthocharis cardamines*).

A couple of days later a wonderful site in a remote valley near Ste. Marre was found. The site was a mixture of limestone pavement, herb rich grassland and scrub. The first species seen were a couple of Black-veined whites (*Aporia crataegi*), and they were quickly followed by Grizzled skipper, Green hairstreak (*Callophrys rubi*), Baton blue (*Pseudophilotes baton*), Adonis blue (*Lysandra bellargus*) Wood white (*Leptidea sinapis*) and Provencal fritillary (*Mellicta deione*). Towards evening we stopped at a lay-by near Le Bourgnou and exploring the grassland we recorded Small heath, (*Coenonympha pamphilus*), Pearly heath (*C. arcania*), Painted lady (*Vanessa cardui*), Green hairstreak and Western dappled white (*Euchloe crameri*).

A return visit was made to the valley near Rocamadour and for the first time in all our visits to Europe, Glanville fritillary (*Melitaea cinxia*) were seen. An insect that I have never encountered before was seen and filmed at this site, and after returning home it was identified as a member of the Ascalaphidae family. During the holiday, twenty-five species of butterfly were recorded. If we had gone a couple of weeks later, the total would surely had been more. Special thanks must go to my wife Margaret for her excellent job of navigating round France, especially the remoter parts. A full list of species seen is available upon receipt of an SAE.

Book Review

The Moths of Devon An account of the Pyralid, Plume and Macromoths of Devon

by Roy McCormick. Published by Roy McCormick 2001, 328pp., 48 colour plates, numerous (black and white) illustrations, 2 maps, (ISBN 0 9540256-1-X) £25 hbk.

The Moths of Devon by Roy McCormick FRES is a veritable mine of information and describes the past and present status of the Pyralid, Plume and Macromoths of Devon in great detail.

A brief introduction describes the author's successful attempts to form the Devon Moth Group, and the Systematic County List, from which this publication arose. This is followed by sections describing the Geology and Landscape of Devon; Climate and Weather; Conservation-A Short History (a detailed account of county conservation activities and the Devon county list of BAP species); Land Use (and its implications for Devon moths); and a History of Recorders. Further sections describe species that are no longer seen in Devon; Species that have been recorded since 1906; and a section on Migration, which gives a concise account of the variety of migrant species (from the common to the exceedingly rare) which can be expected to arrive in Devon during the year.

The Systematic List provides the main body of the text, and the historical and current status each species is described with details of sites and records, accompanied, where relevant, with snippets of information regarding conservation status and ecology of each species. Interspersed within the text are watercolour illustrations (black and white) of many species by John Walters, an artist who has the extraordinary ability to capture the very essence and character of each species in even the simplest of sketches.

One thing that strikes the reader is the considerable contribution made by the author in terms of species recording, and it would appear that the author, with the aid of other prominent Devon Lepidopterists such as Bob Heckford and Barry Henwood (who also appear consistently throughout the text) are responsible for the wholesale reassessment of the status of Devon moth species.

The book also contains a very useful and extensive gazetteer; reference section; a list of recorders past and present; and a complete listing of Devonshire Association names. The colour photograph section contains 24 pictures which exemplify the diverse range of habitats to be found in Devon, and 24 pictures of moths of special interest such as the Scarce merveille du jour *Moma alpium* which was recently rediscovered in Great Torrington, and the beautiful Purple marbled *Eublemma ostrina*, a scarce visitor to our shores.

It is clear that The Moths of Devon by Roy McCormick is not only an indispensable publication for those involved in the study of Devon moth fauna, but also a valuable addition to the library of any UK Lepidopterist.

Peter Sutton

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Volume 61 • Number 444 October 2002

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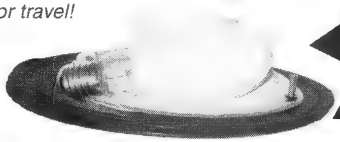

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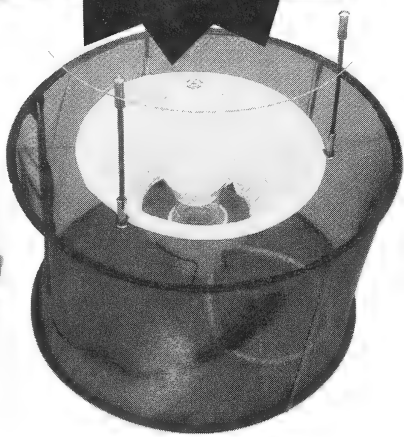

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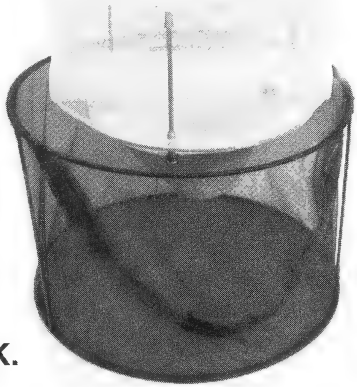

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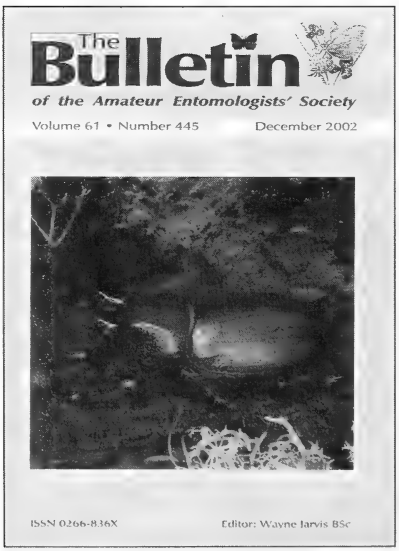

Photo: Nick Holford.

The cover of the *Bulletin* features a male Rhinoceros beetle, *Coelosis biloba* (L.).

This Rhinoceros beetle is found in Central and South America, from Mexico through to Argentina. It is the only member of the genus that is found as far north as Mexico. All of the other species are only found in South America. As is typical of the Rhinoceros beetles, it is the male that has the rhinoceros-like horn on the head. The male also has a horizontal forward extension, or pronotal plate, that is deeply notched in the middle, forming two lateral frontal plates. In the female there is a bump or tubercle on the head, but no horn, and there is a raised flattened knob on the pronotum.

The Bulletin
of the Amateur Entomologists' Society

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Editorial

Welcome to the December issue of the *Bulletin*. This edition is a Special Issue for Beginners. As editor, I have been fortunate in receiving some high quality articles. The second in the series of Classic Wildlife Sites is a fascinating account of Braunton Burrows by Peter Sutton. You can also read an article that may mark the start of a series introducing lesser known groups and their Recording Schemes. The Beginners' Guide to Mayflies has been expertly written by Craig Macadam. Ian Kimber has kindly provided an article on photographing moths. Ian's web-site, UKMoths (www.ukmoths.force9.co.uk) is widely regarded as one of the best entomological resources on the internet. Perhaps the article will inspire AES members to take insect photographs for plates to be included in future *Bulletins!* Paul Talbot's article will hopefully stimulate debate. If anyone has any other ideas for insect-friendly gardening methods, I am sure they would make good material for future *Bulletins*.

I have also taken the opportunity of my guest editorship to include more line drawings within the text than has been typical of recent *Bulletins*.

I hope that members will find this issue interesting. Whatever your opinion, I would be very grateful for feedback. The Society is striving to improve its service to members, but cannot gauge how it is doing without response from the membership. If you have comments on this issue, please email aes@theaes.org or contact me via the PO Box. The AES will endeavour to take on board all criticisms – good or bad.

Phil Wilkins

The Beginners' Guide to the Upwing Flies or Mayflies (Order Ephemeroptera)

by Craig Macadam (11277)

109 Johnston Avenue, Stenhousemuir, Larbert, FK5 4JY.
info@ephemeroptera.org.uk

Groups of flies dancing above your head are common sights along the shores of many stillwaters or rivers. If you look closely you'll see that they have two small wings, two large upright wings and two or three tails. These are the upwing flies, more commonly known as mayflies. This latter name is quite misleading because this group of flies can appear throughout the year. In fact, at one point they were called dayflies since some species have an adult life of a single day. The common name comes from the habit of one species, *Ephemera danica*, which emerge as adults when the Mayflower or Hawthorn is in bloom.

Mayflies are unique as insects in that they have two winged adult forms. The nymph emerges from the water as a dull-coloured sub-imago (or dun) that seeks shelter in bankside vegetation and trees. After a period of a couple of hours or more, the sub-imago once again sheds its skin to transform into the brightly coloured imago (or spinner). It is not clear why mayflies have retained this unique step in their lifecycle, however it is thought that they may not be able to achieve the change from nymph to sexually mature adult in one step.

A mayfly's life cycle starts with the males forming a swarm above the water and the females flying into the swarm to mate. The male grabs a passing female with his elongated front legs and the pair mate in flight. After copulation, the male releases the female, which then descends

to the surface of the water where she lays her eggs. Once mated she will fall, spent, onto the water surface to lie motionless, with her wings flat on the surface, where fish pick them off at their leisure. The male fly rarely returns to the water but instead he goes off to die on the nearby land.

The eggs fall to the bottom of the water where they stick to plants and stones. Adult Baetidae flies pull themselves under the water to attach their eggs directly to the bed before being drowned by the current. The eggs take anything between a few days to a number of weeks to hatch depending on water conditions and the species. The resultant nymphs will spend various lengths of time, up to two years, foraging on the bottom before emerging as an adult fly.

When it is time to emerge, the nymphs make their way to the surface where they pull themselves free of their nymphal shuck and emerge as a sub-imago. While they rest here to dry their newly exposed wings, they are at their most vulnerable to attack from fish.

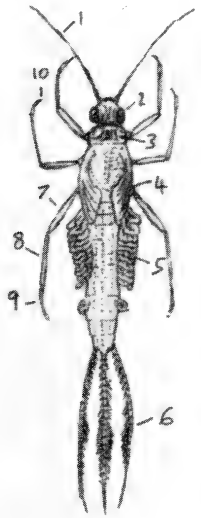

Figure 1. The main parts of a mayfly nymph:
1. Antenna
2. Compound eye
3. Pronotum
4. Wing bud
5. Gills
6. Tail or cercus
7. Femur (pl femora)
8. Tibia
9. Tarsus
10. Tarsal claw

The Mayflies of the British Isles

Only one family of upwing flies can truly be called Mayflies. The Green and Grey-drakes (Family **Ephemeridae**) are large flies with three tails and grey wings. The nymphs of these flies burrow into the silt, sand or small stones on the bottom where they feed on detritus. They are

robust, cylindrical nymphs with tails densely fringed with hairs. Three species are known from the British Isles. *Ephemera danica* is by far the commonest species, although in some areas *E. vulgata* can predominate. *E. lineata* is only known from a couple of sites on the Rivers Thames and Wye.

Although not directly related to Ephemeridae, another family of flies burrow into mud and silt. The Angler's Curse or Broadwings (Family **Caenidae**) are tiny, creamy-yellow flies with three tails. They emerge in the twilight hours of dawn and dusk at the water surface and are often caught in moth traps located near water. There are nine species resident in British waters, but separating the species is quite difficult. *Brachycercus harrisellus* is easily distinguished from the *Caenis* spp. by the presence of three tubercles on the head. *Caenis horaria* and *C. robusta* can be separated by the shape of their pronotum but with the current key the remaining *Caenis* spp. can at best, only be split into two groups. The *Caenis luctuosa* group contains *C. luctuosa*, *C. macrura* and *C. pusilla* whilst the *Caenis pseudorivulorum* group contains *C. rivulorum* and two recently recorded species – *C. pseudorivulorum* and *C. beskidensis*.

The clinging nymphs (**Heptageniidae** and **Arthropleidae**) have flattened bodies to allow them to cling to rocks in turbulent rivers or on the wave lashed shores of standing waters. They forage on the detritus and debris on the bottom and are poor swimmers. As a result, they are well camouflaged and tend to stay out of sight, under stones. Generally, they grow to about 12mm in length and have short sparse hairs on their tails. They are usually found in rivers, although *Electrogena lateralis* (the Dusky Yellowstreak) is also found in upland stillwaters and *Ecdyonurus dispar* (Autumn Dun) is occasionally found in the margins of stillwaters.

Rhithrogena germanica (the March Brown) is, for anglers, perhaps the most famous of the stone clinging upwing flies. It is an early season fly that is probably also the most misidentified fly. Many hatches of so-called March Browns occur in locations that have never seen a March Brown nymph. The true March Brown is quite large, with two tails and fawn wings. It has an extremely localised distribution, unlike its namesake the Late (or False) March Brown (*Ecdyonurus venosus*), which has a widespread distribution, apart from in the South and East. The Late March Brown is similar in appearance to the true March Brown but emerges in the latter part of the year.

Like the nymphs of *Caenis* spp., the nymphs of *Ecdyonurus* spp. and *Rhithrogena* spp. are difficult to identify to species level. *Rhithrogena semicolorata* (Olive Upright) and *R. germanica* can be quickly

separated from other genera by the presence of a single dark spot on the femur of the front legs. Similarly, *Ecdyonurus* spp. can be separated from the other genera by the shape of the pronotum.

Adults of *Ecdyonurus torrentis* (Large Brook Dun) and *E. insignis* (Large Green Dun) are characterised by two tails and mottled wings. The latter fly emerges in the evenings or at dusk rather than during the day. *Heptagenia sulphurea* (the Yellow May Dun) is a widespread fly emerging in the late evening and dusk. It is a medium sized fly with two tails and a distinctive yellow body. Its body, plus its habit of first emerging in May gives the fly its common name. The only other species of *Heptagenia* recorded from the British Isles is *H. longicauda*. This mayfly has only been found on four occasions and is superficially similar to *H. sulphurea*. The nymphs of both species are quite difficult to separate and the sub-imago emerges at sunset so its apparent rarity may be a result of under-recording. It would be useful if lepidopterists running moth traps in the London area could look out for a medium-sized yellow mayfly entering their trap in early summer!

The remaining species of stone clinging nymphs found in British water are *Kageronia fuscogrisea*, *Arthroplea congener* and *Electrogena affinis*. Until recently, *K. fuscogrisea* was also placed in the genus *Heptagenia*. This is the only species in Heptageniidae associated with submerged aquatic vegetation. It has a widespread though very localised distribution in Great Britain, however it is quite common in Ireland. *E. affinis* is the most recent addition to the British list. It was found in the River Derwent, Yorkshire in 1994, but probably exists in other watercourses as it is superficially similar to *E. lateralis*. *A. congener* (Family Arthropleidae) holds a tenuous claim to being a British mayfly. A single adult specimen was found at Stanmore, Middlesex in 1920. It is unlikely that this species is surviving overlooked in a large British watercourse as the nymphs have prominent maxillary palps which are visible with the naked eye and most large rivers have been thoroughly searched by the Environment Agency and its predecessors.

A sub group of these clinging nymphs are the moss creeping nymphs. There are two species that have this characteristic, both in the Family **Ephemerellidae**. *Serratella ignita* (the Blue Winged Olive) and *Ephemerella notata* (the Yellow Evening Dun) are medium sized flies, both with three tails and large hind wings. *S. ignita* is widespread, occurring in both rivers and larger stillwaters. Its familiarity to anglers ranks amongst the great flies such as the March Brown and Iron Blue

Dun. *E. notata* is, as its common name suggests, a yellow fly, which emerges in the late evening. Until recently it was restricted to selected areas in England. However it has extended its range dramatically and now occurs in Central Scotland, where it inhabits rivers with reasonable flow rates.

The **Leptophlebiidae** are distinguished from other Ephemeropteran larvae by their tails that are as long, or longer, than the body. The tails are often held at right angles to each other so that the spread of the tails covers 180 degrees. They are small larvae, rarely over 12mm in length and have filamentous gills that aid identification to genus level.

The adults of the Leptophlebiidae have two forewings, two large hindwings and three tails in common with the true mayflies (*Ephemera* spp.). *Paraleptophlebia cincta* and *P. submarginata* were in fact, once thought to be part of the *Ephemera* genus. The female sub-imagines of the Leptophlebiidae are quite distinctive. *Habrophlebia fusca* is the only member of its genus that has been recorded from the British Isles. It has dark grey wings and a dark olive body. *Leptophlebia marginata* has pale fawn, heavily veined wings and an overall dark brown appearance. *L. vespertina* is smaller than *L. marginata* with dark grey wings and an almost black body often tinged with claret. *L. vespertina* has markedly paler hindwings than its forewings and is reported to prefer peaty or acidic waters. *Paraleptophlebia cincta* is similar to *L. vespertina*, however the body is a dark brown colour with a tinge of purple. *P. submarginata* also has a dark brown body and mottled fawn wings. The wings are heavily veined and have a pale area in the centre of the forewing. *P. werneri* is very rare and is characteristic of winterbournes that cease to flow in summer. The nymphs are associated with aquatic vegetation, which often covers the whole stream channel. The female imagines of the Leptophlebiidae are all broadly similar. They have transparent wings with pale brown venation and brown to dark brown bodies with tinges of claret, red and purple.

All Leptophlebiidae species occur in running waters while *Leptophlebia marginata* and *L. vespertina* also occur in standing waters.

The darting nymphs are highly streamlined and very good swimmers. They dart around the water feeding on vegetation and detritus. They can grow to 18 mm and, like the burrowing nymphs, have three tails with densely fringed hairs. The majority of these flies are the Olives (Family **Baetidae**) which are characterised as adults by their two tails and grey wings. *Labiobaetis atrebatinus* (the Dark Olive), *Baetis rhodani* (Large Dark Olive), *B. buceratus* and *B. vernus* (Medium Olive) and *B. scambus*

(Small Dark Olive) are mostly widespread, but prefer alkaline conditions. Two other Olives that are mostly found in standing waters are *Cloeon simile* (the Lake Olive) and the *C. dipterum* (Pond Olive). Both are distributed widely and look similar to other olives. They emerge from May to October during daylight hours. Other Baetidae flies include probably the most famous mayflies of all – The Iron Blue Duns (*Nigrobaetis niger* and *Alainites muticus*) and the Pale Watery Dun (*Baetis fuscatus*).

Both *A. muticus* and *N. niger* are small flies with blue-black wings and two tails. They emerge throughout the season and *A. muticus* is distributed widely throughout the British Isles, apart from the south east. *N. niger* has a sparser distribution, with scattered records across the country. Unlike the Iron Blue Dun, the Pale Watery Dun is present in alkaline running waters in localised pockets in England and occasionally in Scotland. When it emerges between May and October it appears as a small fly with two tails and pale grey wings. The male fly has distinctive lemon yellow eyes.

Procloeon bifidum (the Pale Evening Dun) occurs widely in alkaline waters and for most of the season emerges in the evenings as a small fly with two tails and pale grey wings. *Nigrobaetis digitatus* has a very limited distribution, being known from Wales and the South of England. It was also recently recorded from Scotland.

Two of the mayflies are known as Spurwings due to the shape of their hind wing. *Procloeon pennulatum* (the Large Spurwing) and *Centroptilum luteolum* (the Small Spurwing) both prefer alkaline conditions, with *C. luteolum* occurring in both flowing and standing waters. The grey winged, *C. luteolum* , is distributed widely, but absent from Wales. *P. pennulatum*, with blue-grey wings, is present in South Wales, although it is highly localised. It also occurs in South and North England.

There are three mayflies from the Family **Siphlonuridae** found in British waters. *Siphlonurus lacustris, S. armatus* and *S. alternatus* (Large Summer Dun) are under-recorded but are likely to be found in running and standing water in localised pockets throughout the country. They emerge during the day between May and August as large, grey winged flies with two tails. These species are fairly unusual as upwing flies usually emerge at the water surface whereas the Large Summer Dun crawls on stones at the water edge and emerges from there. Although the nymphs are superficially similar to the Baetidae, they can be separated by the presence of elongated, pointed corners on the abdominal segments of the Siphlonuridae. The only other mayfly with

these pointed corners is *Ameletus inopinatus* (Family **Ameletidae**). This is a northern species that is found in running water, often at altitudes of 300 metres and above.

The final mayfly from the British Isles is also the rarest that is still known to be present. *Potamanthus luteus* (the Yellow Mayfly) is a medium-sized mayfly that can be found in only two rivers: the River Wye, Herefordshire and River Usk, Monmouthshire.

Collection, Preservation and Identification

Larval Ephemeroptera are easy to collect. Kick sampling, the disturbance of the bed of a watercourse or waterbody, is the most efficient method in running water, whilst in standing water a net can be swept through submerged vegetation or the substrate can be disturbed and the net swept through the disturbed water. Adult Ephemeroptera can be collected by examining, or beating bankside trees and other vegetation. Alternatively, adults can be caught as they swarm near the water. For species that are attracted to light, traps designed for capturing moths can be used.

Both larvae and adults are best preserved in Isopropyl alcohol, which is available from most chemists. The specimen should be clearly marked with the location, date and grid reference where the specimen was collected together with the collector's name.

The identification of British (and Irish) Ephemeroptera is covered by two scientific publications by the Freshwater Biological Association. These taxonomic keys provide the information required to succesfully identify most of the British Ephemeroptera. They also include extensive notes on their life cycles and ecology. It should be noted that there have been some recent revisions and additions to the British Ephemeroptera that are not noted in the FBA keys. The Ephemeroptera Recording Scheme can provide further information on the identification of the British Ephemeroptera and is also willing to provide limited assistance with the identification of specimens, which should be sent, preserved in alcohol. It would be appreciated if you would contact the scheme before sending off any specimens for identification.

Ephemeroptera Recording Scheme

c o Craig Macadam, 109 Johnston Avenue, Stenhousemuir,
Larbert, FK5 4JY.
Email: info@ephemeroptera.org.uk Tel: 07786 631369.

Identification keys

Elliott, J.M. & U.H. Humpesch (1983): A key to the Adults of the British Ephemeroptera with notes on their ecology. *Scientific Publications of the Freshwater Biological Association* No. 47, 101pp.

Elliott, J.M., U.H. Humpesch & T.T. Macan (1988): Larvae of British Ephemeroptera: a key with ecological notes. *Scientific Publications of the Freshwater Biological Association* No. 49, 145pp.

Both available from: The Freshwater Biological Association, The Ferry House, Far Sawrey, Ambleside, Cumbria LA22 0LP. Telephone: 015394 42468

Collection Equipment

EFE and GB Nets, PO Box 1, Bodmin, Cornwall, PL31 1YJ.
Tel/Fax 01208 77400
Website:www.gbnets-uk.com Email:sales@gbnets-uk.com

Editor's note

Readers may care to use this article in conjunction with Craig's previous article:
Macadam, C. (2001) A new checklist of British Ephemeroptera. *The Bulletin of the Amateur Entomologists' Society.* Vol **60**, No 434 (February), pp38-39.

UPWING FLIES (Ephemeroptera)
ADULT FLY IDENTIFICATION AND NYMPH EMERGENCE TABLES

3 Tails/Large Hindwings

Species	Common Name	Habitat	J	F	M	A	M	J	J	A	S	O	N	D
Ephemera danica	Mayfly	Both												
Ephemera lineata	Mayfly	River												
Ephemera vulgata	Mayfly	River												
Potamanthus luteus	None	River												
Leptophlebia marginata	Sepia Dun	Both												
Leptophlebia vespertina	Claret Dun	Both												
Paraleptophlebia cincta	Purple Dun	River												
Paraleptophlebia submarginata	Turkey Brown	River												
Paraleptophlebia werneri	None	River												
Habrophlebia fusca	Ditch Dun	River												
Ephemerella ignita	Blue Winged Olive	River												
Ephemerella notata	Yellow Evening Dun	River												

3 Tails/No Hindwings

Species	Common Name	Habitat	J	F	M	A	M	J	J	A	S	O	N	D
Brachycercus harrisellus	Angler's Curse	River												
Caenis beskidensis	Angler's Curse													
Caenis horaria	Angler's Curse	Both												
Caenis luctuosa	Angler's Curse	Both												
Caenis macrura	Angler's Curse	River												
Caenis pseudorivulorum	Angler's Curse													
Caenis pusilla	Angler's Curse	River												
Caenis rivulorum	Angler's Curse	River												
Caenis robusta	Angler's Curse	Both												

2 Tails/No Hindwings

Species	Common Name	Habitat	J	F	M	A	M	J	J	A	S	O	N	D
Cloeon dipterum	Pond Olive	Both												
Cloeon simile	Lake Olive	Both												
Procloeon bifidum	Pale Evening Dun	River												

2 Tails/Large Hindwings

Species	Common Name	Habitat	J	F	M	A	M	J	J	A	S	O	N	D
Siphlonurus armatus	Large Summer Dun	Both												
Siphlonurus lacustris	Large Summer Dun	Both												
Siphlonurus alternatus	Large Summer Dun	Both												
Ameletus inopinatus	Large Summer Dun	Both												
Arthroplea congener	None	River												
Ecdyonurus dispar	Autumn Dun	Both												
Ecdyonurus insignis	Large Green Dun	River												
Ecdyonurus torrentis	Large Brook Dun	River												
Ecdyonurus venosus	Late March Brown	River												
Electrogena affinis	None	River												
Electrogena lateralis	Dark Dun	Both												
Heptagenia longicauda	None	River												
Heptagenia sulphurea	Yellow May Dun	Both												
Kageronia fuscogrisea	Brown May Dun	Both												
Rhithrogena germanica	March Brown	River												
Rhithrogena semicolorata	Olive Upright	River												

2 Tails/Small Hindwings

Species	Common Name	Habitat	J	F	M	A	M	J	J	A	S	O	N	D
Alainites muticus	Iron Blue Dun	River												
Baetis buceratus	None	River												
Baetis fuscatus	Pale Watery Dun	River												
Baetis rhodani	Large Dark Olive	River												
Baetis scambus	Small Dark Olive	River												
Baetis vernus	Medium Olive	River												
Labiobaetis atrebatinus	Dark Olive	River												
Nigrobaetis digitatus	None	River												
Nigrobaetis niger	Iron Blue Dun	River												

2 Tails/Tiny Spur Hindwings

Species	Common Name	Habitat	J	F	M	A	M	J	J	A	S	O	N	D
Centroptilum luteolum	Small Spurwing	Both												
Procloeon pennulatum	Large Spurwing	Both												

The flies above are expected to emerge in the months shown, however local variations and weather conditions may affect the emergence of some species.

Contact: info@ephemeroptera.co.uk

Photographing Moths – a Beginner's Guide

by Ian Kimber

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Although I've been interested in both moths and photography for a long time, it wasn't until a third interest, the internet, came along that the combination of all three changed my life forever.

In 1998 after a long abstinence from mothing activities, I began to get the bug once again, and borrowed a Heath-style moth trap to run in the garden. Before long I was stumbling over some of the difficult Noctuidae. Without my own copy of "Skinner" – the moth enthusiasts' bible, I struggled somewhat. One day I caught a relatively plain-looking brownish moth, which had me stumped. In desperation, I turned to the internet and started searching for moth identification information. I was somewhat taken aback by the paucity of information about British moths, and decided at that point to build a small website with some information about my catches.

One of the beauties of the World Wide Web is its ability to display a range of multimedia, in particular images. So, how could I get my moths onto the web in photo form?

I had at that time (and still have) an aging SLR camera – a Nikon FE. It is a sturdy and trustworthy beast, but I hadn't used it for a long time and was a little rusty (me, not the camera!). Besides, I wanted some 'instant success', so I turned to my camcorder. With the camcorder I was able to 'film' the moths. With a borrowed video capture card for the PC, I managed to get some still images onto the web.

This was the starting point of my new pastime, and how the website has developed since then could fill a separate article. Four years later, I look back at these early efforts and cringe at the quality of some of them! As each season progresses, I now strive for ever-improving quality, and although I'll probably never reach that perfect photo, here are some of my experiences and tips.

Equipment

Well, suffice to say you will need at least a camera! What kind of camera depends on your circumstances, but if I were starting from scratch, I think I would plump for a digital camera these days. The

market seems to be flooded with digital cameras at the moment, varying wildly in price and quality. The main thing to look out for from a moth perspective is "how close does it focus?" If the average British moth is about 2cm long, then to get a reasonable image size, the digital camera needs to have a macro facility, and close focussing down to 2 or 3cm. There are a number of cameras on the market meeting this requirement nowadays, but check the technical literature carefully, as the minimum focus distance is often hidden deep in the small print. The Nikon Coolpix range has been widely used in the mothing fraternity in the last couple of years, but there are a number of other options. See Plate 02AT (Angle Shades).

If you are working on a budget (a good digital camera might cost around £500), and you already have an SLR camera, then a good option is to buy a set of extension tubes. These are a set of rings of different lengths, designed to move the camera lens away from the body to increase magnification. They usually come in a set of three different sizes, so you can mix and match to get the magnification you want. Extension tubes usually allow you to use the metering system of your camera and can be obtained for around £50 at today's prices.

A standard (50mm) lens in conjunction with extension tubes can give excellent results, but the lens-to-subject distance tends to be rather short, only a few centimetres in some cases. This can cause problems by spooking the subject or blocking out some of the light. A dedicated macro lens is a more flexible alternative. This is usually a 90 or 100mm focal-length lens, designed for close-up work. The better quality macro lenses will give a 1:1 reproduction ratio, meaning that the image size on film (i.e. negative or 35mm transparency) will be the same size as the subject itself. The cheaper end of the market tend to have a 1:1 matched lens which screws onto the filter thread for the larger magnifications. However, the optical definition of these is often very good, and I now use one like this – a Cosina macro lens, which cost me around £130. See Plate 02AV (Small Autumnal Moth).

A tripod is very desirable, if not essential, unless you are using flash. However, I've never been very successful with flash at the kind of close-up distances we are looking at for moths. The harshness of shadows and highlights have always been too intense for my liking, and I don't have a great deal of experience as a result.

Technique

Fortunately most moths are very docile during the day. Once settled they will usually remain in the same position for as long as it takes to get your photograph. There are two types of photographs – those taken in the wild, and "studio shots". It is much more difficult to photograph (and locate) moths in the wild than it is in the studio (or kitchen in my case). However, in an ideal world, it should not be possible to tell into which category a photograph falls.

Of course, we don't live in an ideal world, so some compromise is needed. When photographing moths in a studio setting, do try to persuade your moth to rest on a natural background, and in as close a setting as you might expect to find it in the wild. My biggest regret is that so many of my older photographs have an annoying "sameness" to them, or were taken against smooth pieces of wood. Try to picture the moth in its habitat, and think why the colours and patterns have developed the way they have. The number of yellow species in the autumn suggests that they rest unnoticed among the fallen autumn leaves. However, by the same token, don't camouflage the moth so much that you can't find it in the final photo!

Observe their habits too – notice that Puss moth, kittens and the prominents like to hold onto a branch or bark, and you are less likely to get them to settle down on a leaf surface for example. Pugs like a flat surface such as smooth bark, and many of the waves often rest on the underside of leaves.

Once you've persuaded your moth to pose, more often than not it will allow you to position and reposition your camera, focus carefully and even make adjustments to the background. Some are less obliging, and an option is to put the moth in the fridge for a short while to quieten it down. However, I've found this to be usually counter-productive, as the change in temperature as you bring it into the warmth again often prompts it to start moving about or warming up its flight muscles.

Depth of field, exposure and focus

At the kind of magnifications required for a reasonably sized image, it can be difficult to ensure that the whole of the moth is in focus. It is therefore preferable to use the maximum depth of field available, and this may require some manual override depending on the camera equipment you are using.

This can have a subtly beneficial effect if using natural light rather than flash, in that it will very likely result in a long exposure time, especially if using slow film. I regularly take moth photographs with an exposure time of 10 seconds or more. This makes any camera shake caused by the shutter release negligible. Of course, a tripod is essential. Also, this method is not usually suitable for outdoor photography, since any slight breeze can cause blurring.

With the limited depth of field available, accurate focus becomes crucial. If using extension tubes or other high-magnification techniques, this is normally effected by adjusting the camera to subject distance rather than turning the focus wheel on the lens. This can be rather tricky, but is made much easier by mounting the camera on a rack-and-pinion focussing mount, although these can be expensive.

Advanced high-magnification techniques

More and more people are becoming interested in the microlepidoptera these days. Some of these moths are incredibly beautiful, making for some superb photographs. Yet it's not so difficult to achieve good results with a relatively basic camera package.

For the smallest micro-moths, I now use a technique known as lens-stacking. This involves reverse-mounting a small (say 50mm standard) lens onto the front of a longer (say 100mm or 135mm) lens, which is mounted normally on the camera. There are special coupling rings which you can buy for this purpose, but I use Cokin filter adapters glued together, which are much cheaper.

This technique allows the normal metering system of the camera to be used, and creates a high-magnification set-up, with the added benefit that a normal 50mm lens when reversed has better definition at small lens-subject distances. The result is a very narrow focal plane, but incredibly high clarity. See Plates 02AU (*Hypatima rhomboidella*) and 02AW (*Scoparia pyralella*), as well as the front cover.

For the smallest moths, this is my favourite technique. However, there are some caveats. Firstly, some vignetting can occur with this method. It is wise to add some extension (i.e. extension tubes) to reduce this. This however increases the magnification still more. Secondly, the lens to subject distance is often only a few millimetres. This can cause lighting problems and problems with the lens touching the subject matter. Thirdly, it is often necessary to ensure the subject is in exactly the same plane as the film. This is to ensure that enough of the moth is in focus, due to the extremely limited depth of field.

Another issue here is that the magnification can be such that it is impossible to fit an average tortrix moth (for example) into the field of view. Hence it is only suitable for the very smallest species!

With today's digital cameras, it is now almost possible to replicate this situation without any additional lenses. It won't be long before the manufacturers improve on it, but for the time being, this technique still wins out for me.

Film type and speed

With a digital camera, this is not really an issue, but it is wise to invest in an extra storage card (the types vary depending on the camera). I would recommend setting the camera on the highest quality setting with compression. This means that the image is usually saved as a JPG file (rather than the uncompressed TIFF). The difference in quality between compressed and uncompressed is negligible, but it is possible to fit many more photos on the storage in JPG format. The high quality (sometimes called "fine") may produce a larger image than your intended final use, but part of the image can be selectively cropped if necessary, and it is easy to resize the photos in software.

For non-digital camera work, the choice of film type is rather subjective and depends on your individual taste. I now use Fuji Velvia 50 ASA transparency film exclusively, which produces nice warm and bright colours. It is a rather slow film, but as described earlier, this is not necessary a problem as longer shutter speeds are quite acceptable.

Breeding moths for photography

Moths found in the wild, and in particular those attracted to light traps, are often worn or have slightly damaged wings. It is tempting to photograph a species that you haven't photographed before, even though it may look a little scruffy. I would recommend you hold out for a more pristine specimen if it's possible to restrain yourself!

Many moths are quite easy to rear from caterpillars or even the egg stage. This is an excellent way to obtain perfect specimens, whilst having the opportunity to study their lifecycles at the same time. Indeed, a good number of the tiniest micros are virtually impossible to find as adults and have to be reared through anyway.

In conclusion

If you were thinking of taking up moth photography, I would highly recommend it, as the subjects are cooperative, photogenic and often colourful!

There aren't too many reference sources about photographing moths specifically, but Roy Leverton's excellent book *Enjoying Moths* is about as close as one comes. There is a very good section on photography, but the book is littered with mouth-watering photographs of moths and caterpillars, and is a tremendous starting point.

References

Leverton, R., (2001), *Enjoying Moths.* T & AD Poyser, London.

Skinner, B., (1998), *Colour Identification Guide to Moths of the British Isles.* Viking, Middlesex.

Brown Hairstreaks and Damon Blues in September

by Matthew Rowlings (9108)

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In early September I was investigating one of the valleys near to my new (temporary) home in Montreux, Switzerland. It was hot and sunny, with little hint of autumn. I pulled over at about 1300m, on the Swiss side of the Col du Grand St Bernard and walked along a short track on a flowery grassy bank. Among very fresh Adonis, Chalkhill and Common Blues, I eventually confirmed the Damon Blue, *Agrodiaetus damon.* These were rather worn, but were feeding vigorously on the various wildflowers. The males were a two-tone blue, very pale "Chalkhill" blue around the worn edges but retaining the bright, iridescent blue in the base of the wings. I even found a female which was in much better condition than her males.

I was just leaving when a Brown flew into a bush. As it was behaving oddly for a Meadow Brown, I investigated. It was a perfect, large, spectacular female Brown Hairstreak, *Thecla betulae.* She opened her wings and basked in the sun for a couple of minutes before proceeding into the Blackthorn bush in search of oviposition sites. After a prolonged search up and down the twigs, she eventually laid a single, conspicuous egg at the typical location of a branch of a twig. Despite squeezing through the thorns, leaves and branches, she was apparently undamaged. So, when she settled on the next bush to repeat the exercise, she was still perfect.

Minutes later I found a second female Brown Hairstreak, much smaller and a little worn, basking on grass in the middle of the meadow. Is this normal for Brown Hairstreaks, about 20 metres from the nearest shrubs?

Ladybird Phenology

by Paul Mabbott (10111)

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A question was raised on the AES Forum (http://groups.yahoo.com/group/aes/) as to the peak time for finding ladybirds. The following notes, with many 'ifs and buts', were my response to this enquiry.

Dates vary considerably between species. They are affected by the weather and the availability of food. Logically we might expect to see the largest numbers of ladybirds after all pupae have eclosed in summer, or after they come out of aestivation in the autumn. Indeed there are commonly peaks of activity in September or October. However, in practice, the main peak tends to be in June or earlier following mild winters. This is because there is often overlapping of generations, especially in warmer parts of the country. Some species may have two or even more generations in one year, which can cause confusion!

We also have to be careful about differentiating peak numbers, from peak activity, from peak observation. If you grub around in sheltered places in mid-winter or mid-summer you will often find more ladybirds than at the supposed peak period (after emergence from pupae). This is because they will congregate in suitable sites, often quite small areas. Indeed in urban areas the 2-spot Ladybird (*Adalia bipunctata*) may be most often observed in winter because it is attracted to houses. Arboreal species are most commonly observed when they descend from tree canopies to overwinter on trunks or on the ground.

Between species, a rule of thumb for time of emergence relates to the colour of ladybirds:

- those which have the largest areas of black and/or the smallest amounts of yellow tend to be the earliest to come into activity and mate.

Thus in any year one would expect the mainly black ladybirds (such as the Pine Ladybird, *Exochomus quadripustulatus*) to become active in February-March; these will be followed by the larger red (with black spots) ladybirds notably the 7-spot (*Coccinella septempunctata*); then the smaller red ones (especially the 2-spot, *Adalia bipunctata*); followed by the yellow ones: especially the 14-spot (*Propylea quattuordecimpunctata*) which appears to have the shortest period of activity. The Orange Ladybird (*Halyzia sedecimguttata*) is not seen in

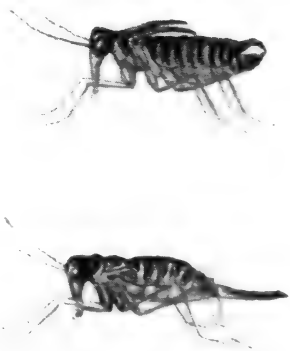
large numbers of "new" individuals until October/November, though the overwintered generation can survive in large aggregations until April. This probably relates to food availability (they feed on mildews) which are most abundant in autumn. Indeed, the same applies to another fungivore, the yellow 22-spot (*Psyllobora vigintiduopunctata*) which is often (but not always) most numerous in October or later.

The whole topic of timings of ladybird occurrence is an area where all information would be useful. Simply keeping records of first and last sightings, and peak activity over several years can be informative. This is especially so for the less common, tree-dwelling species.

PS: I am co-ordinating surveys of ladybirds in London and Essex and would welcome any records. See www.peter-mabbott.supanet.com or contact me at the address at the top of this article.

Insects about in December: Snow Fleas

English name: **Snow Flea**
Scientific name: ***Boreus hyemalis*** (Linnaeus, 1767)
Family: **Boreidae**
Order: **Mecoptera** (Scorpionflies)
Size: **c5mm**
Distribution:**throughout Britain**



These strange little insects can be found walking over the ground in mid winter, especially in upland areas. They are mature from October to April, but most activity is in November and December. Males and females are distinctive. Both have markedly reduced wings, but those of the males have serrations along the inner edges. This is to hold the female on his back during copulation.

Snow Fleas can be found by setting pitfall traps or sifting through moss from suitable areas. So field work can be rewarding, even in the depths of winter!

The illustration shows a male (above) and female (below) Snow Flea.

One thing leads to another

by Paul Mabbott (10111) and David Mabbott

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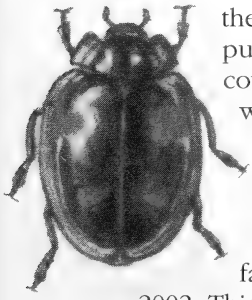
Casual observations of a common beetle in a neighbourhood Sheffield park have ramified to unexpected lines of study. The following observations will be published in detail, separately, when (and if) the studies are complete, but this note is submitted to demonstrate how simple observations of common species in urban areas can easily provide useful information.

Observations on Pine Ladybirds

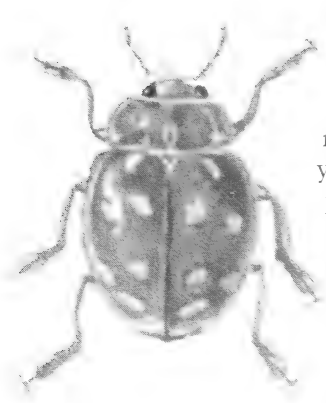
In 2000 we observed considerable numbers of Pine Ladybirds (*Exochomus quadripustulatus*) on eleven trees in Millhouses Park (SK3382, VC63). These were presumably feeding on the abundant Horse Chestnut Scale (*Pulvinaria regalis*) on lime and sycamore trees. We were particularly intrigued by the numbers active (and mating) as early as February 2001 and decided to regularly count the numbers of the various life stages. We collected pupae remaining in December to see whether any could survive into winter (as has been demonstrated with the orange ladybird). No imagines emerged but a small parasitic wasp did: *Aprostocetus neglectus* (Hymenoptera: Chalcidae), which had not been formerly observed in the U.K.



The Pine Ladybird numbers declined during 2001 far below the numbers of 2000 and fell further during 2002. This corresponded with the virtual absence of the Horse Chestnut Scale. Monitoring the trees for several more years may indicate whether this is a simple predator-prey population model with the prey (scale insect) proliferating in the absence of predator, ladybird numbers increasing gradually until the prey is virtually eliminated at which point their populations also will crash.

Cream-spot Ladybirds and population dynamics

While counting ladybirds during June 2002 we were surprised to find large numbers (up to 125 in early July) of larvae and pupae of the Cream-spot Ladybird (*Calvia quattuordecimguttata*). Similar numbers were seen on street trees further north on the A621 but nowhere else in Sheffield as far as we know. The Cream-spot is by no means a rare



ladybird (we see two or three individuals each year in Sheffield). However, Roger Hawkins, in his monumental study for *The Ladybirds of Surrey* (Hawkins, 2000), recorded only 369 specimens over twenty years (this compared with, for instance, 5,450 pine and 4,980 7-spot ladybirds). The numbers of imagines produced over a small area of south-west Sheffield this year must have exceeded that.

Some observations of the Cream-spot pupae demand further investigations: some of them failed to emerge completely; others were possibly attacked by heteropteran nymphs and parasitic flies; parasitic flies (as yet unidentified) emerged from others. These problems, not noted to a great degree on adjacent 2-spot larvae, perhaps account for the relative rarity of the Cream-spot.

An interesting sidelight arises from the rearing of pupae of *Adalia* species, aphid-eaters which are always common on these trees. Pupae were collected (most of which emerged although some were parasitised, apparently, by the same fly that afflicted Cream-spots). These allowed a reliable assessment of the proportions of the various pattern forms of the 2-spot and 10-spot ladybirds. This does not correspond with the proportions of imagines observed by visual counts!

Thus, our simple study of a population of one ladybird has led into many (potentially useful) tracks. The same might occur to anyone keeping regular records of any common species in their neighbourhood.

Our thanks to many people who have given advice on the various elements of this study; particularly members of the AES Forum e-group.

Reference

Hawkins, R., (2000) *The Ladybirds of Surrey*. Surrey Wildlife Trust, Surrey.

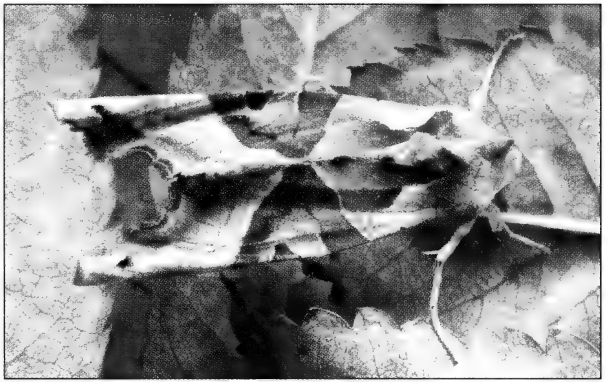


Plate 02AT. Angle Shades (*Phlogophora meticulosa*).
(Nikon Coolpix 995)

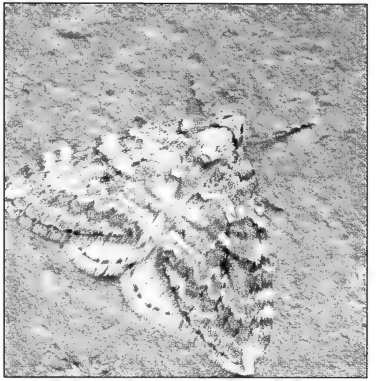


Plate 02AV. Small Autumnal Moth (*Epirrita filigrammaria*).
(Nikon FE, Cosina 100mm macro & 1.1 converter, Fuji Velvia 50ASA)

Plate 02AU. *Hypatima rhomboidella*.
(Nikon FE, Cosina 100mm macro & reversed Nikkor 50mm,
Fuji Velvia 50ASA)

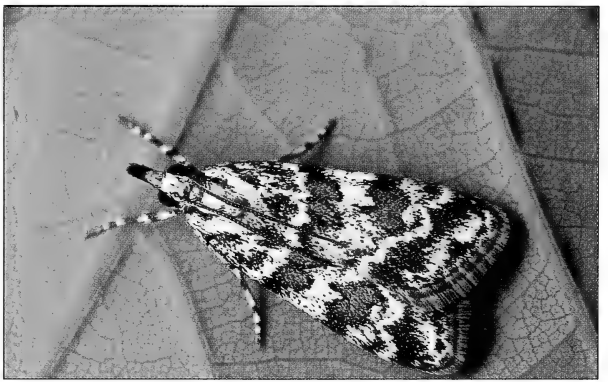


Plate 02AW. *Scoparia parallela*.
(Pentax ME Super, Pentax 100mm macro
& reversed Nikkor 50mm, Fuji Velvia 50ASA)

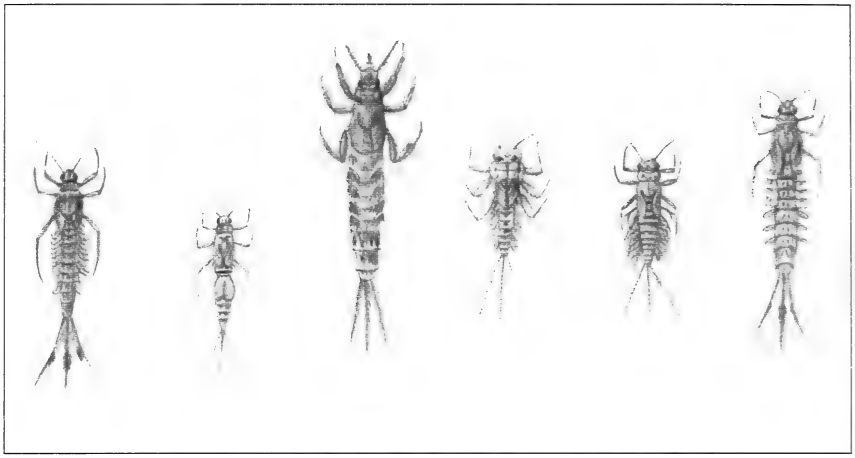


Plate 02AR. Mayfly nymphs from families, left to right,
Baetidae; Caenidae; Ephemeridae; Heptageniidae; Leptophlebiidae; Siphlonuridae

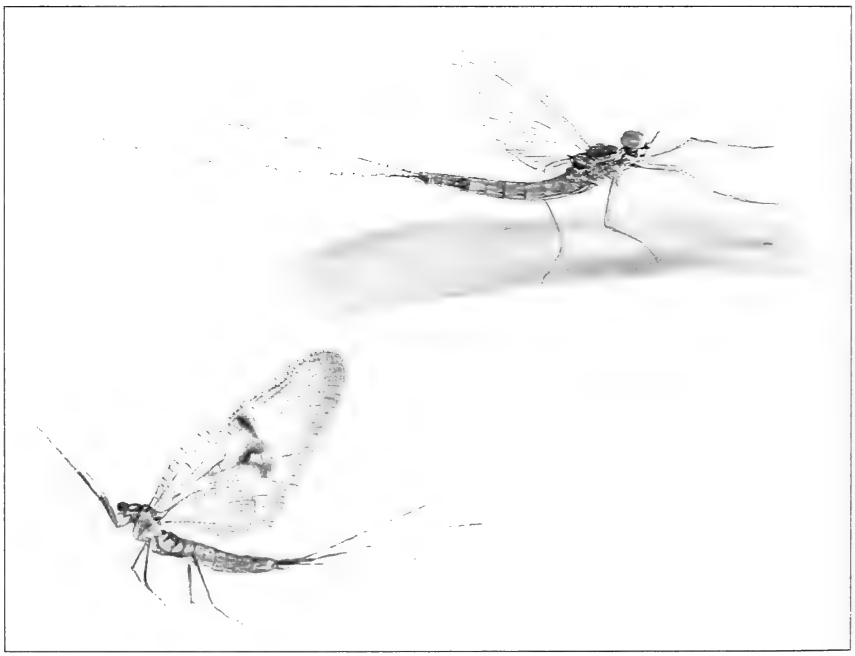


Plate 02AS. *Alainites muticus*, the Iron Blue Dun (above)
Ephemera danica, the Green Drake (below)
(Macadam – The beginners guide to Upwing flies or Mayflies)

Plate 02AAB. Over a foot of sand and a whale were deposited on this beach after a fierce storm. The dune sand-cliffs provide an abundant habitat for many species of Hymenoptera.

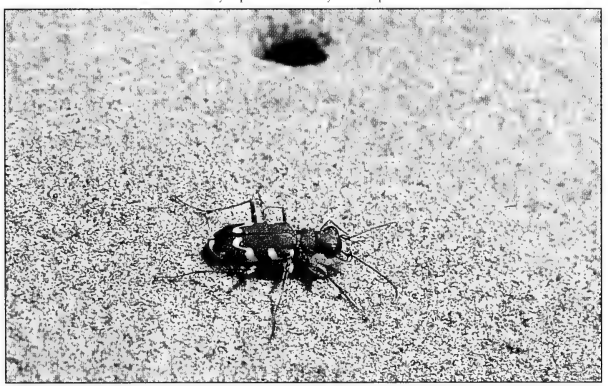


Plate 02AAD. Sparkling assassin: the remarkable Dune tiger beetle, *Cicindela maritima*, another scarce species found at Braunton Burrows.

(Sutton, Braunton Burrows)

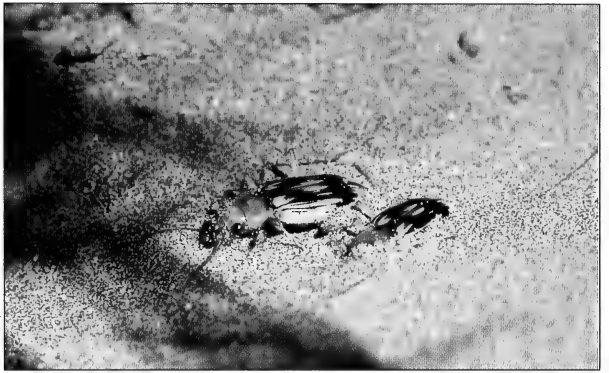


Plate 02AAC. The rare Beachcomber, *Nebria complanata*, which is restricted to coastal sites along the Bristol Channel, has suffered at the hands of mechanical beach-cleaners which remove its strand-line habitat.

Plate 02AAE. Paul's garden.
(see Talbot, Dead wood in the garden.)

Plate 02AX. One of Europe's largest insects, the Great green bush-cricket, *Tettigonia viridissima*, (female nymph).

Plate 02AY. Small Blue *Cupido minimus*, a great rarity in Devon where it is now restricted to a handful of colonies in two 10 km squares.

Plate 02AZ. Powerful master of the air, the Dark green fritillary *Argynnis aglaja*

Plate 02AAA. The nationally scarce Dune chafer *Anomala dubia* (left), and the Poplar leaf beetle *Chrysomela populi* on a Pyramidal orchid.

(Sutton, Braunton Burrows)

Goat Moths and Gravel Pits

by Rob Partridge (8956)

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It is a sobering thought but almost forty years have elapsed since my first encounter with the Goat Moth (*Cossus cossus*). By the age of ten I was already fascinated by wildlife in general and by moths and butterflies in particular. Most boys then seemed to go through a phase of collecting "bugs", and I can recall meeting two older lads one afternoon in West Fen near Ely in Cambridgeshire. I knew them slightly and they showed me their catch – a huge, rather ugly-looking larva in a glass jar. We didn't have many books but they knew well enough what they had and why it would have to remain in a glass or metal container if they were to see the adult moth the following year. The fens in those days had many pollarded willows and I have no doubt that is where the caterpillar had fed for some years before being captured as it made its way towards a patch of soft soil in which to pupate. A year or two ago I revisited the area but there seemed to be few suitable trees remaining.

Thirty years later, the moth and I met again. A friend of my son's brought us a battered but recognizable adult that had been found close to an outside light. That was interesting – most authorities state that the Goat Moth rarely if ever comes to light, though Skinner (1998) says that it is "Occasionally attracted to light". This led to me operating a Robinson trap in the very same garden that summer and, amongst a number of new species for the village, another Goat Moth duly arrived; a fresher-looking female found on the lawn close to the trap. Next we examined the garden, superbly sited alongside the Ouse Washes nature reserve, and found larval borings in some of the willows. At about this time, the species was being reported as in decline in much of its range, so to find it alive and well in my own village was doubly rewarding.

Over the next season or two, I found other sites on the Ouse washes and along the Great Ouse River itself. One particularly good site near Ely was destroyed by an illegal development; the company concerned bulldozed several acres of willow scrub and received a reprimand from the local council followed by retrospective planning permission! Do you ever get the feeling we are playing with loaded dice?

So far, older, riverside willow trees had been the place to look but in the mid-nineties I began to find the Goat Moth in a different environment. We have a number of mature gravel pits nearby. Chatting to an angler one day, he told me about the borings they found in the

trunks of the trees and bushes when they were clearing swims. Within a few minutes I had found several affected bushes. The significant thing is the word "bushes" – the willow trees seemed to have no visible signs of larval workings but many small sallows, some with trunks no more than two or three inches in diameter, were riddled with holes. An adjacent pit had similarly affected bushes, and another complex nearby proved the best so far, with every likely clump of sallows showing evidence of long-term use.

The Goat Moth is not the only insect that makes holes in *Salix* species, but most beetles produce smaller, differently-shaped borings. The Musk Beetle (*Aromia moschata*), a splendid creature in its own right, does produce similarly-sized workings. It is certainly present in our area and I don't claim to be able to tell one hole from another, but plenty of other evidence indicates that in most of these sites the Goat Moth is responsible. Visit these pits in June and search carefully among the grasses growing amongst the sallows. It won't be long before you find an odd-looking empty pupa case half-in, half-out of the sandy soil. They look for all the world like little lobsters, with the two sides splitting outwards and resembling the crustacean's claws. In some years they have been surprisingly common; once I found thirteen in a space of no more than ten yards. By the side of another pit there were just two small, virtually dead sallow bushes but for some years these exuviae continued to appear just a few feet from them. Once the moth has taken a liking to an area, it seems it will exploit it to the full.

Searching beneath the bark of affected bushes in the autumn sometimes reveals the small pinkish larvae. As they mature they dig deeper into the timber and then they take some getting out! Woodpeckers love them, especially the Greater Spotted, and one frequently finds their rectangularly chiselled holes in the stouter branches. A fully grown *Cossus* larva can be four inches long and as thick a man's finger – well worth several minutes hard pecking, I would have thought.

This larva can look after itself, though. Two years ago I picked one up in late August at Earith gravel pits. It promptly took hold of my middle finger in those timber-crunching jaws and gave me a painful nip, drawing a little blood. Undeterred, I placed him in an empty sweetcorn tin and took him home. The tin was filled with gravelly soil and when I inspected it in early spring I found the larva in a silk cocoon, lively and quite annoyed at being disturbed before its time. I was not about to tangle with him again so I replaced his covering and left well alone. The pupa must be formed just a month or two before

who was duly released after being much admired. This is not a colourful moth but the subtle shades of grey, white and brown, combined with delicate reticulations and striations, create a beautifully camouflaged effect on old bark, and for those of us who like our moths big, this must be one of the best.

Only a scientist would be able to prove why the Goat Moth has become attached to my local gravel pits but one or two possibilities suggest themselves. The wind-blown seeds of willows, osiers and sallows germinate quickly in the wet margins. All are fast-growing but unless the pits are really old, say, more than fifty years, there will be little fertile soil. This, combined with variable water levels, may stress the trees and bushes, and in this condition they seem to be more attractive to wood-boring insects. The Goat Moth has often been the target of over-zealous gardeners in the past, with various horrible substances being used to "treat" affected trees, but I would not be surprised if the moth had actually selected trees that were in decline for other reasons, rather than being the original cause of the problem. The sandy soil makes for easy pupation but more importantly, perhaps, it warms up quickly and drains well. These *may* be factors that favour the moth at present – but who knows?

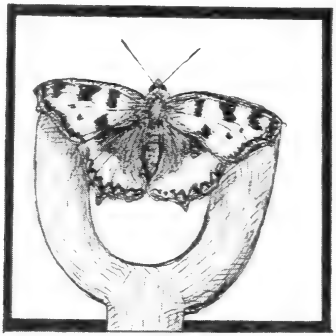
I believe that the Goat Moth is classified as Notable b (occurring in between 31 and 100 10km squares in the British Isles). The reasons for its decline are probably not fully understood but the continuing mania for "tidying up" the countryside and removing dead or dying timber certainly poses a further threat. Gravel pits continue to increase in number and extent across the eastern counties but few have any level of protection and sooner or later someone will want to develop them. So far I have been able to avert some damage to my local colonies by meeting managers on-site and explaining the situation – my trusty set specimen is invariably worth a thousand words from me!

It is surely likely that the moth occurs in other gravel pits in the Ouse valley – it may be more widespread than we realise. Sending any records to your local recorder may help to preserve in the future one of our most primitive but impressive moths.

This article first appeared in *The 12th Report of the Huntingdonshire Moth and Butterfly Group.*

Reference

Skinner, B., 1998. *The Colour Identification Guide to Moths of the British Isles. (2nd edition)* Viking, London.



Gardening for Insects
Dead wood in the Garden

by Paul Talbot (11776) & Sue Warren

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Background – Our Calderdale garden

As I have written elsewhere in this journal (Talbot, 2001), our garden here in Calderdale West Yorkshire is very small – only about 15 × 12 feet. Although small it contains many interesting habitats and insect-attracting plants. Most of the plants are grown in terracotta plant pots of varying sizes. These are placed on a gravel bed that forms the base of the garden and also along the walls. We also have several Honeysuckle cultivars grown over trellising on three sides of the garden; these are planted through the gravel into a prepared compost and rotted leaf mould mix. The garden also contains two half-barrel ponds, which have been established since March 2000 and now teem with invertebrates, along with the occasional Common Frog and Smooth Newt that take up temporary residence. Although Paul is primarily a lepidopterist concentrating on the micro-lepidoptera and Sue is studying the Odonata, we are also interested in other insect orders. In fact, we enjoy nothing more than sitting in the garden on a hot summer's day with a glass of chilled white wine watching the busy lives of the insects around the garden!

Deadwood habitat creation

One habitat, which was sadly lacking in the garden, was any dead wood. Having a garden that is basically a small clearing facing into a large area of broadleaved woodland, this seemed a rather glaring

omission. We have tried to concentrate on creating some of this habitat in the last year or so. This we have done by placing dead wood in its various forms into different parts of the garden to see what, if anything, would be attracted to utilise it. We did not want to simply take part-rotted logs from the woodland and plonk them in the garden, as we wanted to create extra habitat, not simply transfer it from the local woodland to the garden! The opportunity fortunately arose to acquire various types of wood to create the different types of deadwood habitat we wished to investigate without us having to either buy or take the wood from elsewhere. Whilst on our regular walks down the local canal towpath we kept spotting various nicely sized logs which had either been thrown or fallen into the canal and had then been removed by British Waterways workmen. This wood was carried off home for future use. At around the same time, the wildlife charity that we are involved with brought in contractors to clear some scrub, which was invading a wetland area that the group wished to preserve. As the wood was felled and chipped we managed to acquire a couple of sacks of the chippings.

We decided to set up one of the logs that was about three feet in length and eighteen inches in diameter against a wall. This wall received a goodly amount of afternoon sunshine (because of the aspect of the house, we don't get any direct sunshine at the rear until after midday). This log was stood on its end, long way up and holes drilled into it with varying sizes of wood drills to hopefully encourage colonies of solitary wasps and bees to take up residence. Another log was propped in a shady corner behind one of the ponds and holes also drilled. Two more were laid lengthways along a wall, which is shaded, and directly in front of the woodland at the rear of the garden. Finally, the last log was placed on the floor between the two ponds and pots of Ferns placed around to help shade it.

The chippings we had gathered were the subject of much discussion earlier this year on the AES Forum. We were interested in trying to recreate a small "dead tree" filled with well worked chippings as has been tried on a much larger scale in various woodlands. The problem we had was: how to create a "trunk" that would hold the wood chippings but not be either too hard for insects to bore through or so soft that it would rot down too quickly. We have eventually settled on 12 x 12 inch pieces of florist's oasis hollowed out to leave a ¼ inch thick wall. We have several trial pieces of this hung up around the

garden weathering to see if it will prove viable in the long term. We have not yet tried them with wood chippings inside, as we want the chippings to weather and start to decompose first. Any suggestions as to other suitable media to contain the chippings or suggestions on how to "spice" up the wood mix so as to make it more attractive to invertebrates would be most welcome.

We also cut down some logs my neighbour had stored for his hobby of woodturning, which, for various reasons, were surplus to his requirements. These were cut into eighteen-inch lengths of about nine inches in diameter. We wanted to recreate a rot hole type habitat with these. We carved out a hole about three inches from the top and gradually sloping further into the log until the hole was about eight inches deep at the base. Into these we placed a small amount of mixed wood chip and soil and poured in some rainwater to start the thing off. We hung these "rot hole" logs from the trellising with wire in shady and sunny situations to see if this made a difference to the invertebrates attracted.

So that sets the scene for our attempt at creating dead wood habitat in a small garden. We were rather pleased with the thought and effort that had gone into attracting some deadwood invertebrates but the true test was, would anything utilise this habitat?

The invertebrates

Almost immediately, Sue spotted piles of wood dust appearing below the log between the ponds in the fern area. These were obviously invertebrates that had been living in the log when we rescued it from the canal edge, so at least something was using it! A few days later, in May, I spotted several exuviae protruding from beneath this same log. These were carefully extracted and sent off to a local dipterist to see if he had any ideas as to likely species. Unfortunately he had no idea what order, let alone what species, they belonged to. The exuviae are now awaiting examination by members of the Yorkshire Naturalists' Union entomology section; hopefully someone will be able to give us an answer eventually! A few days later we spotted our first live visitor to the same piece of dead wood: a female Cranefly was spotted ovipositing into the log. Great excitement - our first visitor was so impressed she had decided to lay her eggs! We let her lay a large batch of eggs into the log and then potted her up and sent her to our dipterist contact. He was able to identify her as *Tipula (Dendrotipula) flavolineata*, a species whose larvae are known to develop in dead wood. This species is not thought to be rare in Yorkshire but is only

infrequently recorded in the county and in fact this was only the sixth Yorkshire record since 1981. Even more interestingly the same dipterist had carried out an extensive survey of the diptera in the woodland behind the house throughout 2001 and not found this species. Seemingly even tiny gardens can add to our knowledge of the distribution and composition of our county fauna!

The log which was set up in the sunny situation with the various holes drilled into it, was also very quickly discovered and investigated by several Wasp species of various sizes and colours (or at least we think they were all wasps). These seemed to spend hours simply investigating one hole after another, seemingly unable to make a decision as to which hole was suitable! Eventually several started to enter the holes and make alterations to the size of the entrance; it's amazing how these tiny creatures can chew their way through such a solid material. One of the Wasp species was a rather nice yellow job with black bands and appeared to stock the nest hole exclusively with Hoverflies, although Sue did see one mount an unsuccessful attack on a very small worker Bumblebee. We have taken several of what seem to be different Wasp species as voucher specimens and sent a selection of these along with various Parasitica collected from the garden moth trap to Dr Mark Shaw at Edinburgh University for identification.

The "Rot hole" logs seem to have attracted interest from various Hoverfly spp amongst others. Perhaps some of the rot hole breeding species have bred? We didn't like to poke around in the logs in this first season in case we damaged or destroyed any larvae present. One lesson learned from the construction of these logs was that we should have made the entrance hole larger to enable easier access with a tablespoon to sample the contents! We should have more to report on this type of habitat next season as we intend to create more of these logs with larger entrances in time for next spring (2003).

Conclusion

This is a brief summary of the first year's experiments in creating some dead wood habitat in one very small South Pennines garden. We have tried in this brief article to give an idea of what is possible in one's garden, whatever the size. As was said in a previous article, one does not have to have a huge garden to be able to create some suitable invertebrate habitat. Our tiny garden has so far produced 488 Moth species (14 of which have also been found as larvae), 12 Butterfly species, 20 Coleoptera species, 3 Odonata species (one of which,

Pyrrhosoma nymphula breeds annually in the ponds), 14 Diptera species and 65 Parasitica species. This is all within three years of beginning to record moths and after only one year of recording other invertebrates and we haven't even started to record many orders which are abundant around the garden such as Caddisflies! The South Pennines are not exactly noted for having an extensive invertebrate fauna and if we have recorded this many species in the garden so far, just imagine what is possible in larger gardens in more favourable climes! A very useful side effect of attracting all these insects to one's garden is the possibility of long term intensive observation of species one usually only sees for brief periods in the field. Watching the Wasp species this summer has definitely wetted our appetite for further study of their fascinating lives; we would only perhaps see these species very occasionally in the field. As we write this article (9/10/02) the weather is still unseasonably sunny and quite warm, the "yellow with black bands" wasp colony is still very active, we are not sure if this species is always active this late in the season or if this is just an exceptional year? We are sure that as the years progress and we manage to make more observations of the invertebrate visitors and residents in our tiny "wildlife friendly garden" the answer to this and many other questions will finally be answered to our satisfaction and very great pleasure.

We hope this article will stimulate further experimentation and discussion amongst AES members in creating viable invertebrate habitat in the garden. Far too often, claims about what is required for attracting wildlife into one's garden are ill founded and badly researched rubbish! I hope that other members will be tempted to write to the Bulletin or Forum and inform us of what they do to encourage invertebrates into their gardens. We would also be delighted to hear suggestions of how the dead wood habitat could be improved upon or better monitored.

References

Talbot, P., (2001), The Wildlife Friendly Garden, *The Bulletin of the Amateur Entomologists' Society*, Vol 60, no 439 (Dec 2001), pp 238-243

Further reading

Alexander, K.N.A., (2002) *The invertebrates of living and decaying timber in Britain and Ireland- a provisional annotated checklist*, English Nature report no 467, English Nature, Peterborough

Fry, R. & Lonsdale, D. (eds) (1991), *Habitat Conservation for Insects- A neglected green issue*. Amateur Entomologist, 21. AES, London (out of print)

Good, R., (2000), The Value of Gardening for Wildlife- what contribution does it make to Conservation? , *British Wildlife* Vol 12, no 2 (Dec 2000), pp 77-84

Kirby, P., (2001) *Habitat Management for Invertebrates*. RSPB, Sandy, Bedfordshire.

Peoples Trust for endangered species *Stag Beetle Friendly Gardening* – leaflet.

ANNOUNCEMENTS, REQUESTS AND REPLIES

Regular readers of the Bulletin will not recognise this section. The aim is to try to increase the interactivity between members. This section can remain as long as there is interest and material to include.

Please send replies or further requests or announcements to the AES PO Box, or email to aes@theaes.org. Members will be relieved to hear that both of these are now fully functional again.

Anyone who finds this section useful is recommended to join the AES Forum, a discussion group on the internet. This can be found at http://groups.yahoo.com/group/aes.

Wine Ropes and Sugaring

AES Council Member, Fiona Vass has made a request for information about members' favoured recipes for attracting moths. Would anyone be prepared to divulge their secret sugaring recipes, as Fiona is not having much success with her sugaring efforts? Fiona writes: "When I lived at the centre of an agricultural monoculture I had great success with ripe bananas, brown sugar and rum. Now I live in the middle of town, bananas and rum placed on the top of an apple four feet in the air skewered on a bamboo pole obviously isn't good enough!!"

Young (*The Natural History of Moths*, 1997, T. & A.D. Poyser) and Leverton (*Enjoying Moths*, 2001, T. & A.D. Poyser) both suggest one tin of black treacle, 1kg of muscavado sugar and 500ml brown ale, with or without rum and pear drops. To these basic ingredients may be added "secret" extras.

If any AES members have their own recipes, we would like to publish them in future editions of the *Bulletin*. Alternatively, has anyone carried out comparative studies of different sugaring recipes?

Readers are referred to some previous contributions from Jan Koryszko for ideas, in particular his note in the October 2001 Bulletin (Volume 60, p187).

Aquilegia and Bumble Bees

by John S. Fleming (11309)

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During mid to late May I became aware of a group of small bumble bees working around a large patch of short spurred *Aquilegia* in my garden. Nothing unusual in this, but on closer inspection of the *Aquilegia* I noticed that the bees were not entering the flower but landing on each of the spurs in turn and punching a hole in the side. Why was this?

The bees appeared to be *Bombus hortorum*, but I could not be certain. I am aware of the so called "illegal nectar drinking" in runner beans robbing the gardener of beans due to poor pollination, but the *Aquilegia* spurs appear to be blind tubes and have no source of nectar. What were the bees doing and what, if anything, does the *Aquilegia* get from this action?

Mayfly Recording in southern England

If Craig Macadam's Mayfly article has inspired you, the Ephemeroptera Recording Scheme is looking for volunteers to run moth traps in the Hertford, Reading, Stanmore, Staines, Tilford and Elstead areas of southern England during late May and early June 2003. If you think you can help with this request then please contact the Ephemeroptera Recording Scheme at info@ephemeroptera.org.uk for more details.

Wild Shots

The AES has been contacted by the director of *Wild Shots*. *Wild Shots* is a new Granada Television series that encourages people of all ages to use their home video cameras to become wild life photographers. Presented by award-winning natural history film maker, Nick Gordon, *Wild Shots* reveals how to get great video footage of often elusive creatures. Nick, who has spent almost all of his professional life in the Amazon rain forest, will reveal some of the tricks of the wild life film maker's trade.

Says Nick: "The rain forest is home to the weird and the wonderful, but that doesn't mean that there aren't all sorts of fascinating indigenous creatures to capture on video. Insects in the garden shed or badgers in the local country park, urban foxes and bird life, all these and more are fascinating subjects. I hope *Wild Shots* encourages people to pick up their camcorders and start shooting. And if there are people out there who already have natural history footage we would dearly love to see it!"

Initially, the programmers are looking for people shooting wildlife in northwest England. If you have footage or would like any further information please ring *Wild Shots* on 0161 374 5566.

The Lily Beetle reaches Banbury

by David Keen (3309)

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I first came across the Lily Beetle – *Lilioceris lilii* (Scopoli) – when I found an adult on lilies in my garden in Farnham, Surrey on 24th September 1980. The species was present in the following two years in this locality, adults being noted in July 1981 and May 1982.

I had not seen it since I moved to Banbury, Oxfordshire in August 1982 despite lilies being grown each year. Then on 28th May 2002 my wife, Wendy, drew my attention to "a red beetle" on one of her prize specimens in our garden. No doubt we will now be seeing more of this handsome beast.

The Light Orange Underwing *Archiearis notha* on the wing

by Rob Partridge (8956)

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Following an email from a very knowledgeable acquaintance, I decided to go out at the earliest opportunity to see this moth for the first time. It is a rather local moth nationally and it certainly has very few sites in the modern county of Cambridgeshire.

March 28th 2002 was a day of continuous sunshine and light breezes – apparently ideal conditions. I arrived on the edge of the wood at 10.00am to find that spring was fully underway, with several Chiffchaffs singing and a male Brimstone butterfly enjoying the warmth of the car park's verges. As I made my way along the main ride I disturbed the peace of at least half a dozen Peacocks and amongst them two Commas. At weekends the wood is a popular spot for walkers but this morning it seemed I had the entire place to myself.

The directions I had received were precise and I soon located the aspens that are the only foodplant of *A. notha*. The only other stands of aspen that I know of are dense young thickets that have suckered out from the original single trees, so it was surprising to discover these older trees scattered amongst ash and oak trees and dense hazel, sallow and blackthorn scrub. Many aspens lay rotting on the ground and there seemed to be relatively few healthy trees with a good crop of catkins. Nevertheless, this was the spot.

At 10.20am, as I stood in one of the cross-rides, a small brown butterfly flew past at head height. I had not unfolded my net so there was little point in giving chase – it had disappeared almost immediately anyway. Slowly the realisation dawned that no "small brown butterflies" were on the wing in late March – it must have been a day-flying moth. Quietly I closed the stable door and made up the net.

For the next two hours I wandered to and fro in front of the aspens. Butterflies of the three species already mentioned became numerous as the sun warmed the edges of the rides but no more moths were seen. Eventually I sat in a sunny clearing beneath the aspens, watching the woodland birds going about their business and enjoying that moment of promise that spring never fails to bring. The snap of a twig did not exactly wake me up because I was not exactly asleep but as I turned

my head the two Muntjac deer who had made their way to within ten yards of me froze in astonishment for fully as many seconds before scurrying away to a safe distance. There they began to bark as only they can and they kept up this assault on the silence of the wood for a timed twenty minutes!

I returned to the ride at 12.30pm and immediately saw a second moth, a longer view in which the brilliant underwings were plainly visible. My attempts to net it were laughable and I hope that no-one was watching. The moth is not particularly fast but it is very cryptic in flight and against the broken background of vegetation it simply becomes invisible within seconds. One I followed closely was seen to fling itself several inches sideways in the air as I raised the net. The moths were now on the wing and I was seeing one or two every five minutes. Like the first they tended to appear at head height and by crouching I could keep them in view against the sky but running along, crouching and waving one's arms about must look very much like an orang-utan impersonation and could easily lead to awkward questions at the local police station.

Eventually I managed to net a fresh male as he basked on the ground. In the container I could see the pattern on the underside of the hind wing that distinguishes *A. notha* from his closely related and commoner cousin, the Orange Underwing, *Archiearis parthenias*. Three more were netted for a closer look, all as they rested on the ground, and I noticed that they 'basked' on damp spots – perhaps they were not simply enjoying the sun. The final moth was a female, noticeably larger and darker than the males. Observing them as they flew in the early afternoon, several were seen to rest up at twenty feet or so on bare ash twigs, and nearer ground level they were often pursued briefly by Peacock and Comma butterflies.

I left the wood at 3.00 pm still worrying about those geriatric aspens. It is not the first tree people think of planting, but without it a number of rare species of moth would become considerably rarer. We cannot afford to lose a single piece of the widely scattered jigsaw that is the remains of our countryside. I think I'll write a letter to the people who manage that wood – a small repayment for a very pleasant day.

Strange goings on with a Spanish Tiger Moth

by David Keen (3309)

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On 12th September 2001, I was walking in the garden of our friend's villa in Andalucia late at night when I noticed a small tiger moth resting on the wall of the villa. In the hope that it might be a female and be ready to lay eggs I popped it into a suitable container. In the morning it had duly laid several eggs which I brought back to the UK.

Having identified the moth as *Cymbalophora pudica* Esper, I was aware that the larvae are grass-feeders so I was ready for them when the eggs hatched on 23rd September. The five larvae fed up well, each moulting on or about 16th October, 26th October, 5th November, 14th November and 27th November. By 17th December they had all spun very flimsy cocoons in the bottom of the rearing cage so I left them alone and went back to Spain for Christmas.

On checking the cocoons on my return in early January 2002 I noticed three pupae and two larvae. I checked the cage again on 12th April and was surprised that the two larvae had still not pupated but were clearly alive and well within their individual cocoons. One of these larvae then pupated on 20th April.

The first adults – two males – emerged on 21st and 23rd April from two of the original pupae. They were followed by a female which emerged on 4th June from the 20th April pupa. The third of the original pupae was found to be dead on 1st September. On 22 August the final larva pupated and from this a female moth emerged on 2nd September 2002.

I gather that this "delayed pupation" commonly occurs in this species but thought it would be of interest.

Reference

Diaz, M.I 998 *Mariposas Diurnas y Nocturnas de Andalucia*. Centro Andaluz del Libro, Seville.

Classic Entomological Sites: Braunton Burrows, Devon

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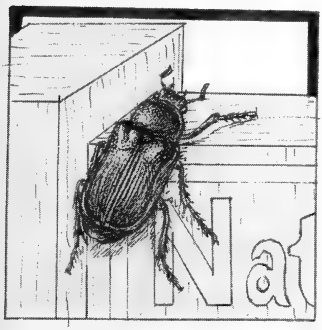
Introduction

Braunton Burrows is one of the largest sand dune systems in England. It is situated on the north Devon coast (Grid reference: SS4433-4537) near Braunton (which is considered to be the largest village in England) and extends north for three and a half miles from the estuary where the Taw and Torridge rivers meet.



The magnificent sand dunes of Braunton Burrows (which are up to 30 metres high), together with Northam Burrows, the Taw-Torridge estuary and Braunton Marshes, constitute an area of 3,120 hectares which has recently been designated by UNESCO (United Nations Educational, Scientific and Cultural Organisation) as Britain's first International Biosphere Reserve. Braunton Burrows has long been recognised as a unique site of international importance, and was one of the original UNESCO UK Biosphere Reserves. The concept of Biosphere Reserves originated from a UNESCO conference in 1968. These reserves are defined as "areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use."

Braunton Burrows was newly designated with this global accolade (which is the scientific equivalent of achieving World Heritage Site status) in November 2002. It fulfilled the new and stringent criteria by virtue of the fact that it contains an abundance of rare and threatened species, a wide range of unspoilt habitats, and has also been subject to continuous human use over the centuries. Braunton Great Fields provide a very rare example of pre-enclosure agriculture, a system which dates back over 1,000 years.

Braunton Burrows, which takes its name from the fact that it was once maintained by Rabbits, is also part of an Area of Outstanding Natural Beauty (AONB), and forms part of the North Devon Heritage Coast. It was formerly a National Nature Reserve (NNR) and has the dubious distinction of being de-declared in 1996 because of a dubious distinction of being de-declared in 1996 because of a disagreement over

grazing management practices between the landowner (Christie Devon Estates Trust) and English Nature. English Nature and the landowner, together with a number of other agencies, are currently engaged in a concerted management effort to address the conservation needs of this unique and now globally recognised site.

Available information

For a site which has become an International Biosphere Reserve, and which has a long tradition of recording, there is remarkably little data to be found in the public domain regarding its flora and fauna. There are some records in entomological journals, but these tend to be piecemeal, and none are accessible without a considerable research effort. English Nature do have a body of data regarding the flora and fauna of this site, but again, this is not available in the public domain.

A book was published many years ago (Wright, 1932) which contained details of flora, microlepidoptera and birds, but this has been out of print for many years. Recent literature provides a brief overview of the site. Details of the Orthoptera, Lepidoptera, Odonata, Hymenoptera and Coleoptera that are present, together with details of certain conservation issues are found in Sutton and Cooper, 2000 and Sutton and Breeds, 2000.

Some information is available on the internet, particularly regarding the Biosphere Reserve issue, but there is little in the way of biodiversity, with the exception of specific articles on the disappearance (since 198–) of the Fen Orchid, *Liparis loeselii*, from Braunton Burrows (which is on the IUCN Threatened list in all countries across its range), and the presence of the equally rare (RDB1: Endangered) Sandbowl Snail, *Catinella arenaria*.

Braunton Burrows, a history of change

It is clear that the Braunton Burrows dune system, and consequently, the nature of its flora and fauna, has changed considerably over the last century. One of the most significant changes has been the decrease in the level of the water table across the dune system, which is threatening a number of species including the Sandbowl snail. The Fen orchid was probably lost at Braunton Burrows because it is dependent upon a high summer water table, but over-stabilisation of dunes has also been a causal factor in its decline. An outstanding article by John Houston on the conservation management of British dune systems addresses the subject of a dynamic approach to dune management with respect to this and other species (Houston, 199–).

Other factors include the recreational damage (erosion and habitat loss) caused by thousands of visitors and dog-walkers (whose dogs cause damage to flora and disturb ground-nesting birds), although it should be noted here that some light trampling is often beneficial and maintains diversity through the suppression of scrub and grasses. Suppression of scrub and the maintenance and possible extension of areas of short turf through sheep and cattle grazing at Braunton Burrows is another important EN conservation aim listed in the management plan for this site (NMW website, 2002).

The virtual disappearance of Rabbits since 1954 through myxomatosis, (which may account for the loss of the Silver-studded blue from Braunton Burrows in 1972) and their subsequent return, has also affected the nature of the site. Similarly, changing management regimes and land use, particularly with respect to grazing, are major factors. It has been suggested that a study should be undertaken to provide a critical evaluation of how the flora and fauna at the site have responded to these changes during that period (Sutton and Breeds, 2000).

Some serious conservation issues are now being addressed at Braunton Burrows by the parties mentioned above, and it is hoped that these worthy and commendable efforts, particularly with respect to raising the level of the water table to pre-1970s levels (Species Action Plan: Sandbowl snail, 2001) are successful.

Diary notes: A visit to Braunton Burrows, 21-06-02

In a previous article, Braunton Burrows and certain other sand dune systems were described as "magical places, which provide, through their seamless mosaic of habitats, an extraordinarily rich and diverse variety of life." When I visited Braunton Burrows in the full glory of midsummer's day, that description was brought to life. I had come to search for the Dune Tiger Beetle, *Cicindela maritima*, but was immediately waylaid by all number of other fascinating species, including a Dark Green Fritillary, *Argynnis aglaja*, (Plate 02AZ) that flew at great speed across the car park as soon as I arrived. The myriad of life was something to behold, from the bees that toiled among the flower-rich meadows behind the massive dunes, to the fluorescent pink beacons of Pyramidal Orchids, *Anacamptis pyramidalis* (Plate 02AAA), in their first and most vibrant flush of colour. These orchids were almost a surreal spectacle as they shone in the bright sunlight among the colourful flowers and grasses.

The rare red variety of the Early Marsh Orchid, *Dactylorhiza incarnata* ssp. *coccinea*, which is very locally found in dune hollows in

the west of Great Britain, was also present in one of the damper areas of one meadow, where I also discovered a small but flourishing colony of the Marsh Helleborine, *Epipactis palustris*. The presence of this latter species is a sure indication that Braunton Burrows is a calcareous dune system, and, consequently, has a much richer flora and fauna than non-calcareous dune systems.

I began my journey into the huge dunes, making my way towards the grassy sheltered valleys between them. As I walked, there were many grasshoppers and bush-crickets leaping through the vegetation in front of me. The dune system has an extensive Orthopteran fauna including three nationally scarce species (Sutton and Breeds, *loc. cit.*), and the range of species present pays testimony to the variety of different habitats that occur within the dune system. All three species of ground-hoppers are present at the site, and the Common Ground-hopper, *Tetrix undulata*, was immediately evident on patches of bare ground. Two species of bush-cricket nymphs were also noted, the Grey Bush-cricket, *Platycleis albopunctata*, (Notable b) and the Great Green Bush-cricket, *Tettigonia viridissima*, (Plate 02AX), the latter being a Devon BAP species.

Further along the path a Small Blue butterfly, *Cupido minimus*, (Plate 02AY) was observed. 34 species of butterfly have been recorded from the Braunton Burrows sand dune system, and 27 species are known to be breeding residents. Braunton Burrows is a very important site for the Small Blue in Devon, and is one of only two sites in the county where this butterfly still survives (Mitchell, 1999).

Poplar Leaf Beetles, *Chrysomela populi*, (Plate 02AAA) were present in abundance, causing severe local damage to the Dwarf Sallow population in the dune slacks. The protective secretion produced by this species (and certain other members of the Chysomelidae) was evident when the beetles, which congregated *en masse* on the food plant, were disturbed. According to Harde (1998), this pungent liquid, which smells strongly of carbolic acid (phenol) or prussic acid (a solution of hydrogen and cyanide!), is derived from salicylic acid (a natural analgesic which was the precursor to the modern painkiller, aspirin) which is present in the leaves of willow and poplar.

A movement in the grass close to the Dwarf Sallow turned out to be *Ablattaria laevigata*, from the carrion beetle family, Silphidae. This species, like its close relative, *Silpha atrata*, feeds on snails, and is a local species associated with coastal habitats in England and Wales. Also present in grassy areas was the large click beetle, *Agrypnus* (*Adelocera*) *murina*, which is undoubtedly commoner than its

distribution map (Mendel, 1990) suggests. Lack of data in the atlas represents nothing more than a lack of recorders*.

I had now been on the dunes for almost three hours, over an hour of which was spent pottering around in one large dune hollow watching a small colony of Common Lizards, *Lacerta vivipara*. There must be something in the sea air that affects the colour of the males, and I have only seen that remarkable green iridescent sheen on coastal specimens, most notably on the Isle of Portland. The sun had been beating fiercely on my brow all morning, and I became acutely aware that I was slowly cooking, so I began to look for some much needed shade on the landward side of one of the large dunes. The Skylarks were singing for all they were worth in the clear blue sky above, and did not deviate from their task when a large Buzzard circled above the dunes momentarily before returning inland.

I sat in the dappled shade of a willow tree while a slight but refreshing sea breeze cooled my sun-beaten brow, and gazed across the multicoloured carpet of flowers that Spring had thrown across the dune slacks. In a moment of absolute tranquility, I became absorbed in the rare scenery that surrounded me, and recalled the words of Keats in his *Ode to a Nightingale*, who, upon first hearing the magical beauty of its song wondered, "do I wake or sleep?"

I continued the search for my original quarry, and began to make my way toward the dunes on the foreshore. As I walked up the final ridge of dunes, through the stands of Viper's Bugloss, *Echium vulgare*, I saw several more Dark Green Fritillaries and many Common Blues, *Polyommatus icarus*, before I was finally greeted by a crystal clear sea, sparkling before me against the dazzling horizon. With views like this, I could see why Braunton Burrows had gained something of a reputation as a "whale-watching" area.

There were large numbers of yellow composites growing on the fore dunes, and these produced two beetles of note. The first was a specimen of the leaf beetle, *Cryptocephalus aureolus*, bejewelling the yellow petals of its host. The second, which was caught by reflex action as it took to the air, was the flower beetle, *Malachius viridis*.

Over the years, I have developed an ability to quickly scan large areas of ground, even through long grass, for signs of life. Such focussed searching requires a steady pace and the ocular hyperactivity of a shrew. However, this method is not without its drawbacks, which

* The problems associated with the production of provisional distribution maps, including recorder bias, are discussed in the December 2001 edition of the *Bulletin* (Sutton and Browne, 2001).

arise principally from an inability to observe all things peripheral to that conical zone of intense concentration. Consequently, that concentration is often broken abruptly as one realises that one's hair is being roughly and painfully coiffured by the low-slung foliage of a Hawthorn bough, or, in the case of my intense search for the Dune Tiger Beetle, the awful realisation that I had come face to face with a gentleman who had obviously become the recent recipient of the Emperor's new clothes. "Lovely day for it!" exclaimed the gentleman in question. "Indeed!" I shouted politely over one shoulder as I made haste in the opposite direction.

A word about nudists

As per the situation above, and for the sake of the unwary, I feel duty bound to say a few words about nudists. For some reason, sand dune systems and nudists seem to go hand in hand, and it is common knowledge that there is nothing more likely to make a chap fumble his aperture settings than an encounter with one of these uninhibited characters during a foray.

I gained my first experience of this phenomenon during the hot summer of 1984. Having just finished our "O" levels, a friend and I spent two weeks circumnavigating the county of Dorset, finally ending up on the dunes at Studland on our penultimate night. We had walked through the night from the heathlands of the Wareham district, along a route which echoed with the sound of Great Green Bush-crickets, *Tettigonia viridissima,* and which became increasingly lit by Glow-worms, *Lampyris noctiluca*, as we approached the Purbeck Hills overlooking Poole Harbour. When we finally reached Studland beach, we collapsed with exhaustion. I vaguely remember using a Tesco bag as a pillow on the bare sand, and being frequently woken throughout what remained of the night by the high-pitched whining of mosquitoes in my ear. My first bleary-eyed recollection of the day came when I was unceremoniously shoved by my friend, who, having opened his eyes to a number of naked ladies on the beach, whispered, "Oi mate... you're not gonna believe this!" This was quickly followed by a frenzied collection of belongings and rapid exit as other, less aesthetically pleasing specimens hoved into view, and we quickly realised that this was not perhaps the outpost of nubility that it had first appeared to be. Moreover, these libertines, who occupied every conceivable facet of human size, shape and age, also appeared to occupy every nook and cranny of the Studland sand dune system, which called for a cautious approach when searching for wildlife among the dunes. My point is

this. Nudists have an annoying habit of occupying secluded sites of prime entomological interest on certain sand dune systems. In the light of this knowledge, naturalists should prepare themselves for such encounters. If a naturalist does suddenly stumble across a naked person on his or her travels, it is particularly important not to stand and stare at the subject. (Also remember that standing in front of the subject, gibbering and fumbling with your camera, may elicit an unsavoury response.) For those of a more fragile disposition, I would recommend that they carry with them that panacea for all of life's misadventures, a flask of strong sweet tea.

Diary notes continued . . .

I had not seen any Dune Tiger Beetles, and began to move out onto the sands to see if there were any specimens hunting along the foreshore. I had covered a lot of ground, and along the way had come across the decaying bones of what was probably a Long-finned pilot whale, *Globicephala melas* (Plate 02AAB). Strandings of cetaceans along the coasts of Devon and Cornwall typically increase during the winter months (Hobbs, M. and Weir, C., 2002), and last year, it was reported that, in addition to a number of whale strandings, more than 200 dolphins and porpoises were washed up on the beaches of Devon and Cornwall** (Western Morning News, 2002).

Whales and dolphins, like other marine fauna that are occasionally washed up onto beaches, provide food and habitat for a range of littoral species, including amphipods, the principle prey item of the extremely local (Notable a) Beachcomber beetle, *Nebria complanata*, (Plate 02AAC), which is restricted to a number of sites on either side of the Bristol Channel. Initially, I thought that my inability to locate any

** We in Britain are used to receiving bad news regarding the dichotomy of interests between conservation issues and commercial operations. There are many examples, from the conservation of rare strandline species such as *Nebria complanata*, where local authorities regularly overlook criterion No. 26 of Bathing Water Directive 76/160/EC during beach cleaning operations ("the interests of protected sites and rare or protected species have to be addressed with recognised local conservation organisations"), to Scottish National Heritage's abject failure to stand firm against the continued destruction of internationally important habitat (which will have a severe local impact, and may result in the national extinction of the Priority species, the Bog bush cricket, *Metrioptrea brachyptera*. (Sutton, 2002).) However, every once in a while there is the potential for good news. It is clear that the increased number of dolphins and other cetaceans (which are supposed to be protected by the ASCOBANS international Regional Agreement (Hobbs and Weir, (2002),) that are washed up on the shores of Devon and Cornwall is a result of continued bass fishing with paired 'factory ship' trawlers. It is possible that, European Parliament willing, there may be a ban on this method in the near future (Western Morning News, *loc. cit.*). Good news for Braunton Burrows' whale watchers.

specimens of the Beachcomber was a result of a very effective beach-cleaning operation. However, it soon became apparent that in addition to the whale being brought ashore, a fierce storm had also dumped about 25-40 cm of sand on the beach, covering the strandline habitat that would otherwise have been present in the area in front of the fore dunes.

I continued walking along the edge of the sand cliffs (which provided an abundant habitat for Hymenoptera) for a mile or so, but could find no evidence of the Beachcomber or the Dune Tiger Beetle. Eventually I turned back, and continued my search on the dunes above the sand cliff. I encountered a specimen of the Dune chafer, *Anomala dubia* (Plate 02AAA), a dune specialist, which had a remarkable violet hue. Being used to observing metallic green specimens, I had to have another look to make sure that I hadn't misidentified this splendid creature. I have also encountered this species on the Studland dune system in Dorset, and it was recently mentioned and illustrated in the excellent article on the "Insects of the Hayle-Gwithian Towans" (Haes, 2002) in the April edition of the *Bulletin*. This local species is not mentioned in *A Review of the Scarce and Threatened Coleoptera of Great Britain* (Hyman and Parsons, 1992), and, as yet, there is no provisional atlas describing the distribution of British Chafers (Scarabaeoidea). However, an overview of the distribution of this species is provided by Jessop (1986): "Very local, found mainly on the coast in England and Wales, becoming less common northwards and rare in Scotland, occasionally found inland in southern England."

Among other debris on the fore dunes were a pair of sun-bleached planks, which were carefully lifted in my fruitless search for the Beachcomber. I did not manage to find this species, and the situation at Braunton Burrows did not look promising. However, John Walters (*pers. comm.*), who visited the site five days later, informed me that he found several specimens. John also found the Carabids, *Anisodactylus binotatus*, and *Bembidion mannerheimi*, which are both new records for Braunton Burrows (and the provisional atlas by Luff, 1998), and also the Warf Borer, *Nacerdes melanura* and the Darkling Beetle *Nacerdes melanura*, again, new records.

What I did find beneath the planks were several specimens of the Strandline Burrower, *Broscus cephalotes*, and an old vole's nest, which could conceivably (or not!) have once been home to the flea, *Megabothris rectangulatus*. Mr Robert George kindly supplied details of a single record of this flea, from Braunton Burrows, which, in spite of subsequent efforts to record it from vole's (*Clethrionomys glareolus*) nests, has not been recorded at the site since. This has raised questions

about the validity of this record (George, 1970) from a species whose natural European distribution is characterised by a somewhat cooler climate (*e.g.* northern Norway, Sweden, Finland, North Scotland). It would be interesting to see if a further analysis of vole's nests at the site could resolve this matter.

Finally, having returned leaden footed through the dunes, and having made what must have been a three mile round trip in the searing heat, I spotted a small frenetic movement among the flowers of the Sea Bindweed, *Calystegia soldanella*, on the side of a fore shore dune. At last, I had finally caught up with the elusive Dune Tiger (Plate 02AAD)! I watched as its iridescent colours flashed in the bright sunlight as it raced around in rapid stop-start fashion. The Dune Tiger Beetle is a nationally scarce species (Notable b) and an extremely local insect, being confined to a number of coastal sites in England and Wales. More details of this species, and a current UK distribution map (from Luff, 1998), are provided in the article on British Tiger beetles in the February 2001 edition of the *Bulletin* (Sutton and Browne, 2001).

The walk back across the dune system through the many orchid stands, and the abundance of colour and activity, was as idyllic as the journey to the fore dunes, and the perfect end to another halcyon day at this jewel on the north Devon coast.

A plea for data management of the flora and fauna of Braunton Burrows International Biosphere Reserve

As an International Biosphere Reserve, (which puts Braunton Burrows in the same category as the Okovango Delta in Southern Africa, and the Amboseli National Park in Kenya), it is slightly embarrassing that the data that exists for this recipient of the highest of global accolades, has not been properly collated. It is true that the denotification of the NNR in 1996 was responsible for fundamentally disrupting this process. Had that not happened, it is possible that EN might now have an up-to-date database of records, which would not only provide a checklist of species currently present at the site, but also provide a valuable record of how the flora and fauna of the site has changed over time in relation to the factors (beach-cleaning, loss and return of Rabbits, increasing recreational use, changing management regimes, lowering of the water table *etc.*) that have been discussed. Since this has not happened, it is vital that the body of data that exists for the Braunton Burrows International Biosphere Reserve is collated, evaluated, and stored appropriately (certainly by English Nature, Devon Wildlife Trust and Devon County Council) in an accessible format for those who require

its use. To that end, John Breeds (Warden) will be happy to provide access to the uncollated data, to an appropriate agent (*e.g.* an EN PhD student wishing to evaluate the changes that have occurred at Braunton Burrows over the last century) who is prepared to take on the task (J. Breeds, *pers. comm.*).

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References

Asher, J., Warren, M., Fox, R., Harding, P., Jeffcoate, G. and Jeffcoate, S., (2001). *The Millennium Atlas of Butterflies in Britain and Ireland*. Oxford University Press, Oxford.

Breeds, J., (14 12 02). *pers. comm.*

Bristow, C.R., Mitchell, S.H. and Bolton, D.E., (1993). *Devon Butterflies*, Devon Books, Tiverton.

George, R.S., (1970). Is *Megabothris rectangulatus* (Wahlgren) (Siphonaptera: Ceratophyllidae) a Devon insect?. *Entomologist's Gazette*. **21**, pp225-228.

Haes, E.C.M., (2002). Insects of the Hayle-Gwithian Towans. *Bull. Amat. Ent. Soc.*, **61**, (No.441), pp. 63-83.

Harde, K.W., (1998). *A Field Guide in Colour to Beetles*. Blitz Editions, Prague.

Hobbs, M. and Weir, C., (2002). Wildlife Reports: Cetaceans. in: *British Wildlife*. **13**, (No.3), p.199-202.

Hyman, P.S. and Parsons, M., (1992). *A Review of the Scarce and Threatened Coleoptera of Great Britain. Part 1*. Peterborough: JNCC. pp. 1-484.

Jessop, L., (1986). *Handbooks for the Identification of British Insects (Coleoptera: Scarabaeoidae)*. **5**, (Part 11), pp. 1-53.

Linssen, E.F., (1959). *Beetles of the British Isles*. London, Warne.

Luff, M.L., (1998). *Provisional Atlas of the Ground Beetles (Coleoptera: Carabidae) of Britain*. JNCC.

Mitchell, S.H. (ed.), (1999). *British Butt. Cons. Soc. (Devon Branch). Millennium Atlas '99*.

Mendel, H., (1990). *Provisional Atlas of the Click Beetles (Coleoptera: Elateroidea) of the British Isles*. JNCC.

NMW Website: UK Biosphere Reserves Review. http://www.nmw.ac.uk/mab/BRReport/Braunton.htm

Species Action Plan for Sandbowl snail, *Catinella arenaria*: http://www.ukbap.org.uk/asp/UKPlans

Sutton, P.G., (2002). Council's waste disposal plans threaten rare bush-cricket and other protected species. *BBC Wildlife Magazine*. **20**, (No. 12), pp. 28-29.

Sutton, P.G. and Breeds, J., (2000). Braunton Burrows Revisited. *Bulletin of the Devon Invertebrate Forum*, (No. 6), pp. 2-8.

Sutton, P.G. and Browne, D.E., (2001). British Tiger Beetles. *Bull. Amat. Ent. Soc.*, **60**, (No. 434), pp. 21-35.

Sutton, P.G. and Browne, D.E., (2001). British Tiger Beetles, Reactions and Responses. *Bull. Amat. Ent. Soc.*, **60**, (No. 439), pp. 215-220.

Sutton, P.G. and Cooper, D.A., (2000). The Insect Fauna of South-west Sand Dune Systems. *Bulletin of the Devon Invertebrate Forum*, (No. 5), pp. 6-10.

Press Release: 15 10 02, (2002). *Western Morning News*.

Wright, F.R.E.,(1932). *Braunton, a few nature notes*, Barnes, 15 pp.

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