

Butterfly Conservation Europe

Survey and Monitoring Report

produced by West Midlands

Butterfly Conservation,
Ecotours and the Hungarian
Lepidopterological Society

Őrség National Park 29 July – 04 August, 2006



Introduction

Background

The first links between the West Midlands branch of Butterfly Conservation (Europe's largest insect charity based in the UK) and Hungary date back to 2003 when a group from the branch went to Hungary on the first ever butterfly trip organised by Ecotours. Both the abundance and diversity of species recorded during this visit (over 100 species of butterfly and 250+ species of moth) was impressive but there was concern that this fantastic diversity was threatened by the cessation of traditional management practices. A problem which it was feared might be further exacerbated by Hungary's accession to the European Union.

Here things might have rested but the seed of an idea had been sown. The number of active butterfly and moth enthusiasts in Hungary was tiny, there was a lack of appreciation of the importance of Hungary for Lepidoptera in a European context (with many of the butterflies recorded during the first visit being those becoming increasingly scarce or non-existent in western Europe such as the *Neptis rivularis* **Hungarian Glider** and *Maculinea nausithous* **Dusky Large Blue**), and, in some cases, there appeared to be little specific habitat management for invertebrates taking place. Was there a way that Butterfly Conservation in the UK could play a role? How relevant was butterfly conservation in Hungary to what was happening in the UK? It seemed that the furthering of links between Butterfly Conservation in the UK and other parts of Europe could be justified on many levels. We had already begun to see the fruition of a developing partnership between Dutch Butterfly Conservation and our national office which had led to a sharing of expertise and knowledge and the first joint publication. It was clear that a number of species threatened in the UK were still relatively common in continental Europe and perhaps the encouragement of further studies abroad could assist us in our own conservation efforts at home. For all these good reasons, there had been increasing support for the idea of Butterfly Conservation taking a more European wide perspective. This support finally culminated in the establishment of Butterfly Conservation Europe in 2005.

Meanwhile, the West Midlands branch of Butterfly Conservation had maintained links with Ecotours and it now seemed a good time to take this partnership a stage further by developing a joint conservation project in Hungary. During the summer of 2005, Simon Barker, John Reeve and Mike Williams representing the West Midlands branch visited Hungary to identify a suitable project. They were again assisted by Ecotours and introduced to various people including Szabolcs Safian from the newly formed Hungarian Lepidopterists Society and Csaba Németh of the Órség National Park. The idea of a group of volunteers from the UK visiting the national park to undertake work on butterflies was well received and it was agreed that a project would be developed with the support of the national park to take place in the summer of 2006. The project received the backing of Dr. Martin Warren, Chief Executive of Butterfly Conservation UK, and became the first transnational project to be undertaken under the auspices of Butterfly Conservation Europe. Ten volunteers were subsequently recruited to work in the Órség National Park during the period 29th July -04th August, 2006.

Project Proposal

The aim of the project was to complement work that had previously been undertaken as part of a Macman project. This project had studied the ecology of three species of *Maculinea* in the Kerca Valley within the Őrség National Park: **Alcon Blue** - *Maculinea alcon*, **Dusky Large Blue** - *M. nausithous* and **Scarce Large Blue** - *M. teleius*. The Macman project had highlighted the importance of the study area for all three species of *Maculinea* and had provided valuable new information on population biology. The purpose of the present study was to build on this work by mapping the occurrence of *Maculinea* species over a wider area of the national park and to undertake general survey work of the occurrence of other species of butterflies (see map of survey areas in **Appendix 1**). At the same time support was given to two researchers: Noémi Örvössy and Péter Batári who were undertaking further studies into the habitat preferences of **Dusky** and **Scarce Large Blue** (*M. nausithous* and *M. teleius*). The group were based in national park accommodation at Keserűszer near the village of Őriszentpéter. As well as surveying butterfly populations, a mercury vapour light was run each night at the accommodation to record moths. A list of those moths recorded at light are contained in **Appendix 3** and a full list of butterflies recorded at **Appendix 2**. At the request of the National Park, additional days were spent undertaking a survey of former sites of **Danube Clouded Yellow** - *Colias mymidone* for which no recent records exist and records were taken of those species of Lepidoptera present.

Methods

Survey work was concentrated in eight main areas: the Kerca, Kerka, Szentgyorgy, and Szala Valleys, Szalafo Pityszer, Keserűszer Apatistvanfalva and Ketvolgy. In the first three survey areas, the volunteers were split into three groups: one group to undertake general recording work and the other two groups to undertake a series of transects under the supervision of Peter Batári and Noémi Örvössy. These transects were of two types which supported the particular interests of the two researchers. The transects undertaken with Peter Batári were 50m permanent transects which had been designed to investigate the use of edge habitats by *M. nausithous* and *M. teleius* and those with Noémi Örvössy, while also of a fixed length, tended to be longer and were designed to record the usage of whole habitat patches by the two *Maculinea* species. Transects are a quick method of assessing the abundance of butterflies. They consist of walking a set route in ideal weather conditions (i.e. when butterflies are in flight and therefore easily seen) and counting the total number of each species recorded during a set time period. Wind speed, temperature and humidity readings were also taken.

At the remaining sites, with less time available, no timed transects were attempted. Instead, volunteers tried to cover as much of the site as possible and produce a comprehensive list of all species present.

Results and Discussion

Site Descriptions

SITES: KERCASZOMOR, KERCA VALLEY; BAJÁNSENYE, KERKA VALLEY; MAGYARSZOMBATFA-VELEMÉR, SZENTGYÖRGY VALLEY; ÓRISZENTPÉTER-KESERÚSZER; AND SZALA VALLEY

The meadows situated along the streams: Szala, Kerka, Szentgyorgyvolgyi and Kerca can be described as a complex of damp stream valleys because of the similarity of their structure and biotopes. The meadows along the Kerca Valley are usually smaller and separated by shelter belts, while the Szentgyörgy Valley meadows are much more open and connected to each other. Due to the large area in which *Maculinea* spp. occurred, the diverse management of the meadows (e.g. some apparently abandoned, others cut twice a year) could not really affect the *Maculinea* populations, and on some abandoned meadows the density was found to be extremely high. The surveyed meadows along the Kerka Valley are much more fragmented by arable fields and somewhat isolated, though *Maculinea* colonies can be found on practically every habitat patch. The Óriszentpéter Keserűszer area is a large complex of differently managed meadows, that have been mainly mowed quite recently, which caused a low density of the *Maculinea* species, though they were still found practically everywhere in the area.



SITE: SZALA VALLEY

The upper Szala Valley is situated in the largest forest block of the Őrség. Most meadows here are already afforested, while some still can be found isolated inside the forest. Those remained were found to be in still good condition, though management seems necessary to maintain them as *Maculinea* habitats in the longer term.

SITES: SZALAFŐ-PITYERSZER, APÁTISTVÁNFALVA, AND KÉTVÖLGY

The complex of Szalafő, Apátistvánfalva, Kétvölgy sites can be described as a large mosaic of damp meadows, mesophilous meadows and forest edges, together with dry slopes, warm-xerothermic hilltops and woodland. This habitat complex is home for **Danube Clouded Yellow** – *Colias myrmidone*, which requires humid habitats rich in flowers as well as warm hilltops and forest edges where its foodplant, *Cytisus austriacus* grows. Unfortunately, the habitat structure is changing rapidly, which has caused such a strong decline of population density of *Colias myrmidone* in the last 30 years that it is now threatened by extinction. *Maculinea teleius* and *Maculinea nausithous* were present in all locations.

Results

The presence and absence of **Scarce Large Blue** – *Maculinea teleius* and **Dusky Large Blue** – *Maculinea nausithous* was monitored on over 60 plots in 8 surveyed sites. The surveyed area reached over 1,000 ha out of the 44,000 ha of the Őrség National Park. The final and most important result of the survey is that the Őrség-Vendvidék metapopulation of *Maculinea teleius* and *M. nausithous* is probably the largest in Europe, since both species were present in all surveyed plots and the suitable habitats probably extend to over 10,000 ha. This area deserves an international protection level and future management could perhaps be supported from European Union grants (see below for further information on these two species).

The survey for **Danube Clouded Yellow** – *Colias myrmidone* proved unsuccessful, although a huge area of potential habitats was identified. The foodplant (*Cytisus austriacus*) was only observed in very low numbers. *Colias croceus* has been found at Szalafő, Őriszentpéter-Keserűszer, Kercaszomor and Kéthely, while *Colias hyale* was found only at Őriszentpéter-Keserűszer.

Other butterfly species have been recorded from all sites and are listed in the **Appendix 2**. Those species with conservation importance are listed and annotated below.

Large Chequered Skipper – *Heteropterus morpheus*

This is a rare and local species which can be found only in humid meadows, bogs, and marshlands. It is also a good indicator for this kind of habitat and therefore it was added to the CORINE Habitat Management species list.



Swallowtail – *Papilio machaon*

A common and widespread butterfly which was added to the protected list in order to prevent commercial collecting of the species.

Scarce Swallowtail – *Iphiclides podalirius*

The species is highly dependent on *Prunus spinosa* and *Crataegus* spp. which are common hedgerow and forest edge species in Hungary. The intensive use of DDT and other pesticides after WWII caused a serious decline in the species' population. Amongst other blackthorn and orchard tree feeding species: **Brown Hairstreak – *Thecla betulae***, and **Large Tortoiseshell – *Nymphalis polychloros*** also occur

Large Copper – *Lycaena dispar*

A widespread and fairly common species in the Őrség and Vendvidék, which is already extinct in Britain and nearly extinct in The Netherlands. These examples clearly illustrate the species' sensitivity for habitat use and management of humid meadows and bogs, hence its inclusion on the **NATURA 2000** Annexes II. and IV.

Purple-edged Copper – *Lycaena hippothoe*

It is a very rare and local species which occurs only in bogs and humid meadows, mainly in the areas where there is a sub-mountainous climate or climatic influence from the surrounding mountains. It was found only in 2 small areas in very low numbers in the Őrség National Park during the survey.

Scarce Large Blue – *Maculinea teleius* and **Dusky Large Blue – *Maculinea nausithous***

Wet meadows are among the most threatened habitats in Europe, because of intensification of management and urbanization. Many of the species inhabiting these meadows are endangered, including the Scarce Large Blue butterfly (*Maculinea teleius*) and Dusky Large Blue

(*Maculinea nausithous*). Both species are very sensitive to habitat changes due to their specialized life cycle (see below). The flight period in Hungary is from July to September, with the main flight period being in August.

Habitat loss caused large declines in both Dusky and Scarce Large Blue populations throughout Europe, while in Hungary there are still several large populations. A large population exists in the Orseg region (Western Hungary), where numerous small habitat patches are available for them. This area has very mosaic landscape structure because of the soil properties, undulating surface, land ownership and land management. The traditional agricultural management was mowing for feeding cattle, and sometimes grazing. Mowing had sustained the meadows by inhibiting the bush development and reforestation. The main endangering factors in Hungary are habitat loss and abandon of traditional management like grazing and mowing, which could cause the degradation of potential butterfly habitat's quality.

To conserve species it is important to know its habitat requirements and the potential effects of management and abandonment on quality of the butterfly habitat and on population size. They are the key species which were selected for mapping in the Órség National Park. Both species are restricted to humid meadows, bogs, and forest-edges, wherever their only foodplant the **Salad Burnet** – *Sanguisorba officinalis* occurs. The *Maculinea* species have a special life-cycle. After the second moult, their larvae drop down onto the ground from their foodplant's flower, where they are collected by *Myrmica* ants and carried into the ant nests, where they either act as predators, or are fed as cuckoos by the ants. This symbiotic relationship known as myrmecophylia, where the presence of the ant is necessary for the survival of the butterfly species, is unique to this genus of butterfly. This dependence makes the butterfly species more sensitive for indication of any changes in the habitat. The other key for survival is the management of the habitats. The humid meadows in the Órség National Park were mostly formed by human agricultural activity. This past management opened up the forests in the area, letting the butterflies move between habitat patches. The size of the suitable habitats has probably grown with the introduction and spread of sheep and cattle-keeping in the Carpathian Basin. Unfortunately in the second half of the XXth Century, cattle-keeping has declined very rapidly with the result that large areas now found abandoned. After abandonment the forest returns to its original distribution very quickly, so butterflies become restricted to small, isolated habitat-patches. The management of these habitats by mowing is therefore crucial to prevent natural succession. The time of the mowing must take account of the life-cycle of the *Maculinea* (and other) species, because the imagos lay their eggs in the flowers and flower buds of the *Sanguisorba* plants and the small caterpillars spend at least 2 weeks in the flower before they drop down to the ground. It must be also considered, that too late mowing in the summer may cause serious phenological delay of the flowering of *Sanguisorba*, which would affect the local population of *Maculinea teleius* and *M. nausithous*.

Both species have been recorded from throughout the surveyed area, but the density of the species was highly dependent on habitat use and management. We found meadows mowed just before the survey started with very few specimens but we also found very high density of both species on long term abandoned and sometimes relatively small habitat patches. *M. teleius* and *M. nausithous* are included in the Annexes II. and IV. of the Habitats Directive (NATURA 2000). Edge habitats seemed very important for both species and it is important that this feature of habitats remains.

Alcon Blue – *Maculineaalcon*

Recent revision of the genus has placed species previously listed as *M. rebeli*, *M. xerophila* and *M. tolistus* under the name of **Alcon Blue *Maculineaalcon***. This name now covers all the

previously described species, which are probably ecotypes of the nominate species. To avoid confusion, the nominate ecotype of **Alcon Blue** is listed as the only one present in the Órség National Park, which occurs only in damp meadows, bogs, and humid forest clearings wherever its food-plant, **Autumn Bellflower** – *Gentiana pneumonanthe* occurs. It is sometimes found syntopically with *M. teleius* and *M. nausithous* especially at Kercaszomor and the Kerca Valley.

Idas Blue – *Plebejus idas*

A generally rare and protected species in Hungary which was found only in few numbers in the surveyed area

Common Glider – *Neptis sappho*

The species probably forms a metapopulation along the southern and western boundaries of Hungary (including areas from Croatia, Slovenia, Austria). It is widespread in the Órség, but usually found in very low numbers. During the present survey it was found only at Kercaszomor, Magyarszombatfa and Velemér.

Purple Emperor – *Apatura iris*

Only one specimen was seen of this particularly rare and protected species at Kercaszomor, cemetery. It was circling high up along the crowns of old oak trees. *A. iris* is rarely seen low down, where only fresh males mud-puddle for minerals from the soil. The distribution of the species is restricted to hilly and sub-mountainous areas in Hungary.

Small Pearl-bordered Fritillary – *Boloria selene*

The species is quite widespread and fairly common in all surveyed areas in the Órség. It requires open and wet meadows which are rich in nectar sources.

Marsh Fritillary – *Euphydryas aurinia*

The butterfly is on the wing for roughly one month from the middle of May. During the survey one larval nest was found on **Devil's Bit Scabious** – *Succisa pratensis* at Apátistvánfalva. The species is usually local and occurs syntopically with *M. nausithous* and *M. teleius* and is included on the Annex II. of the Habitats Directive (**NATURA 2000**).

Moth Records

During the whole project moth trapping was carried out at the accommodation with a 160 W mixed light. The light trapping was resulted in more than **119** macro moth species, which is a high number in such a short recording period. The full list of the species are presented in the **Appendix 3**.

Recommendations

1. The re-establishment of a conservation grazing programme in the Órség National Park area is urgently required to prevent further encroachment of undesirable species, particularly **Golden Rod** (*Solidago* spp.) and to maintain the diversity of habitats for Lepidoptera and other wildlife. Grazing priority should be given to those areas where important species like *Maculinea nausithous* (**Dusky Large Blue**) *M. teleius* (**Scarce Large Blue**) and *Lycaena dispar* (**Large Copper**) are present.



2. In other areas, where grazing is not practical, to maintain a mowing or cutting regime. It is recommended that meadows be cut once in every two years and ideally in September. Adjacent meadows should be cut in alternate years. Where meadows had been invaded by **Golden Rod** (*Solidago* spp.) it is recommended to cut at least once every year to eliminate the problem. It is important to avoid any cutting in the months of July and August when eggs of *M. alcon*, *M. nausithous* and *M. teleius* are likely to be present on their hostplant: *Gentiana* sp. in the case of *M. alcon* and *Sanguisorba officinalis* in the case of *M. nausithous* and *M. teleius*.

3. Field margins particularly where there is the presence of trees and shrubs are likely to prove of importance for both *M. nausithous* and *M. teleius* and therefore should be retained as part of any management work. They are also likely to be essential for many other species of Lepidoptera who also prefer more shady or sheltered conditions or use shrub species as their larval foodplant (e.g. *Thecla betulae* (**Brown Hairstreak**) which lays its eggs on *Prunus spinosa*).

4. To designate areas of protection for specific butterflies such as the **Large Copper** - *Lycaena dispar* and *Maculinea* spp.

5. To set up a long term monitoring programme. This should include vegetation monitoring on a number of sites by establishing of a series of quadrats in different areas which correspond to changing habitat conditions. It is of particular importance to monitor the spread of **Golden Rod** (*Solidago* spp.) and to take urgent remedial management action where this begins to further encroach on key habitats for Lepidoptera. Monitoring could also take the form of fixed point photography to maintain a visual record of any habitat changes.



6. To carry out further survey work on both butterflies and moths. This should be focussed on a) areas where key species have already been recorded b) areas which are unrecorded and c) areas which are subject to different forms of management. A priority should be to undertake a comprehensive survey for the globally threatened Danube Clouded Yellow (*Colias mymidone*) to determine whether it has surviving populations within the national park and to determine key factors to ensure its conservation in Hungary.

7. To endeavour to purchase or reach agreement with owners of key meadows with respect to management and to include them within the Orseg National Park where opportunities and resources allow..

8. To seek Hungarian and/or international (EU) funds and other financial sources for both the monitoring and management of these important areas.

9. To organise training for National Park employees in both the recognition of the importance of Lepidoptera in conservation and to provide information on the butterfly species and their habitat requirements.

10. For the above mentioned aims and objectives, a longer term partnership is recommended between the Orseg National Park, national NGOs (e.g. Hungarian Lepidopterological Society and Butterfly Conservation Europe) to develop opportunities for further funding.

Conclusions

The Órség National Park supports a very rich assemblage of Lepidoptera with a number of internationally and nationally important species. This was demonstrated by the large diversity of species recorded in a very short time period. There is huge scope for further recording in this area.

The stream valleys surveyed in particular are of European significance for **Dusky** and **Scarce Large Blue** (*Maculinea nausithous* and *Maculinea teleius*). It is considered that the Órség National Park probably holds the largest surviving populations for both these endangered species in all of Europe. Population densities on transects were high with up to 94 *M. teleius* and 41 *M. nausithous* in just 500 m of a 5 m wide transect. High densities of the species can be found over the 44,000 ha of the National Park of which 50% represents suitable habitats.

The fact that there are also good populations of **Large Copper** (*Lycaena dispar*) and also possibly **Marsh Fritillary** (*Euphydryas aurinia*) present adds to its overall importance. There are also recent records of the occurrence of **Danube Clouded Yellow** – *Colias myrmidone* which appears to have disappeared from much of Hungary and the surrounding countries and is considered to be seriously endangered.

There is no doubt that the Órség National Park area is of huge international importance for its Lepidoptera and its conservation should be a very high priority.

Acknowledgements

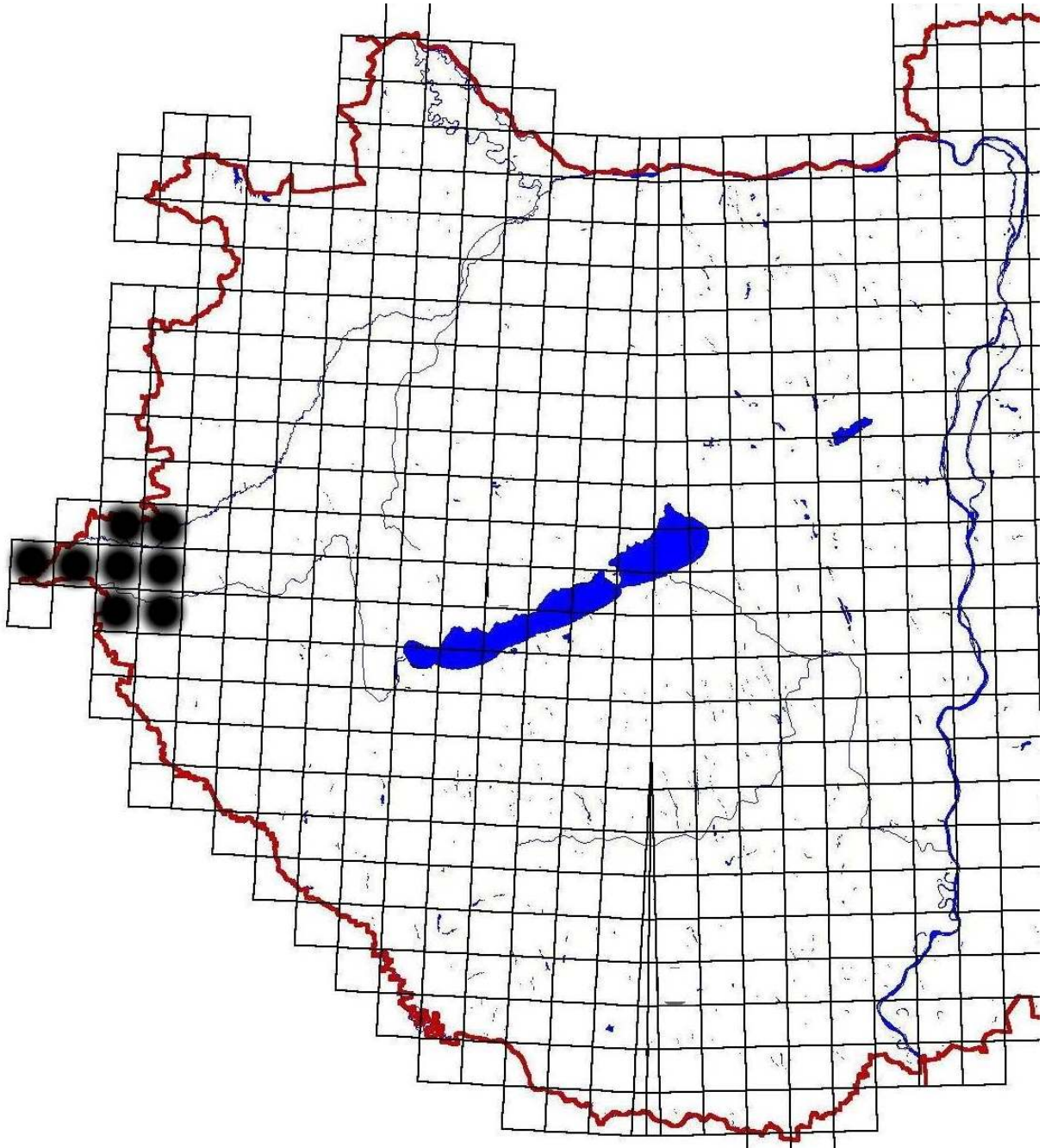
This report has been produced as a result of survey work carried out by volunteers from West Midlands Butterfly Conservation UK with support from Órség National Park, Ecotours and the Hungarian Lepidopterological Society. In particular, we would like to acknowledge the support of Marta Havas, assistant head of the Órség National Park, the staff of the national park especially Attila Mesterházy, Csaba Németh and István Szentirmay; Gábor Orbán from Ecotours; Noémi Örvössy and Péter Batári from the Hungarian Natural History Museum; and Szabolcs Sáfián (aka Sáfi) from the Hungarian Lepidopterological Society. We would also express our appreciation of the hospitality and kindness shown by the many people who supported the project in different ways and made us so very welcome.



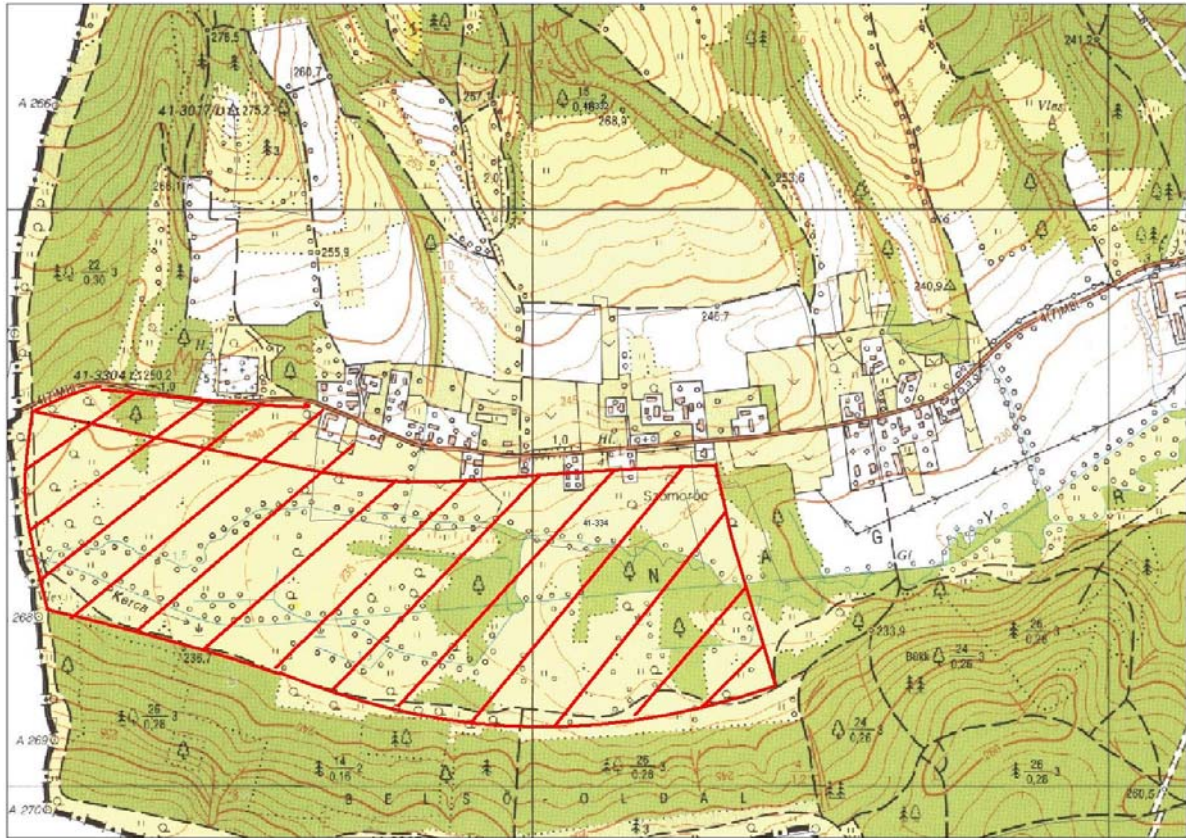
John Reeve, Neil Thompson, Dean Fenton, Mike Taylor, Dr. Tony Simpson, Nick Williams, Anne Spencer, Maike Williams, Mike Williams, Dr. Simon Spencer

August 2006

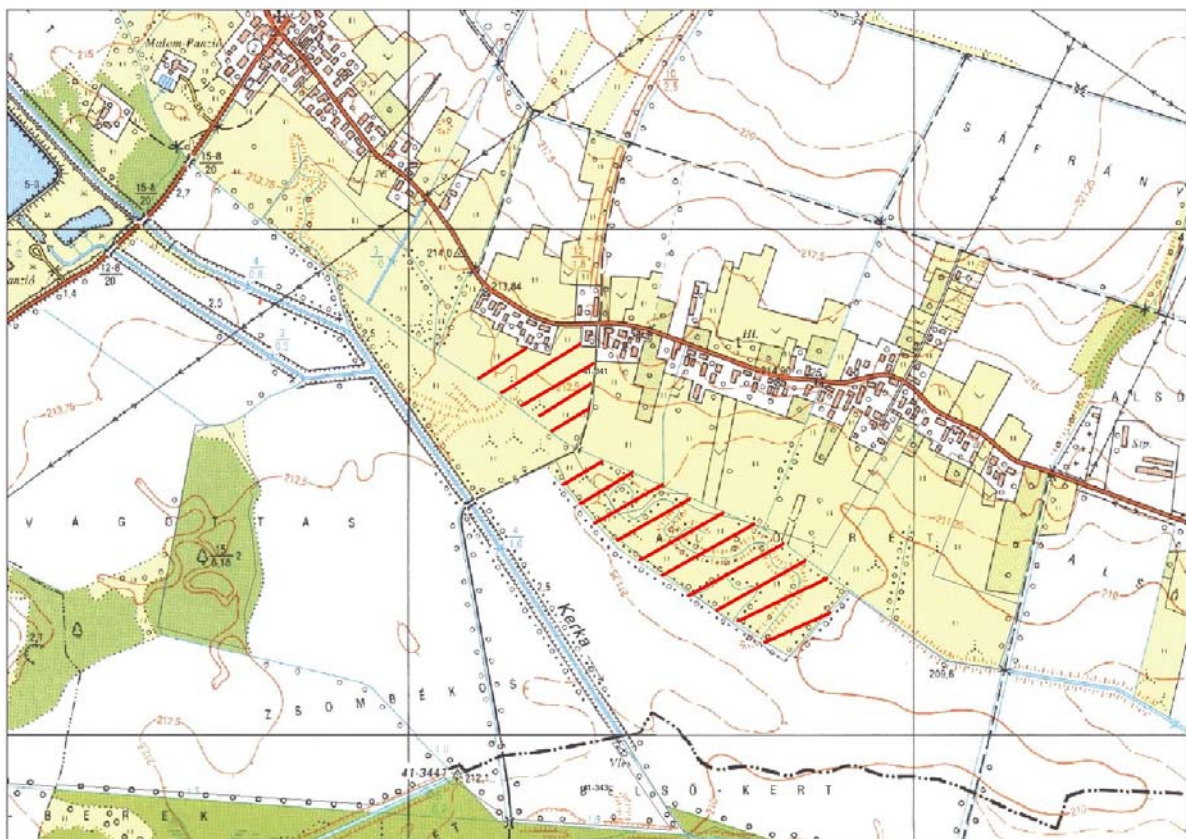
Appendix 1.



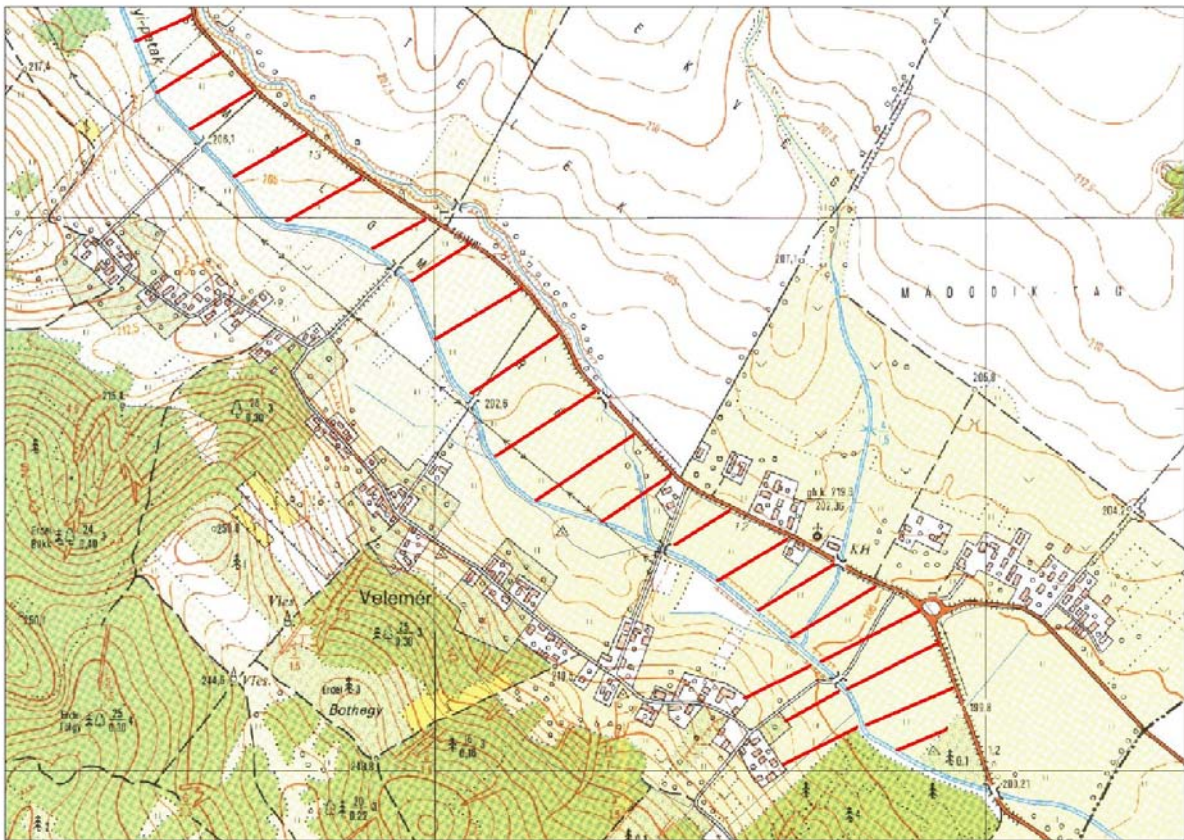
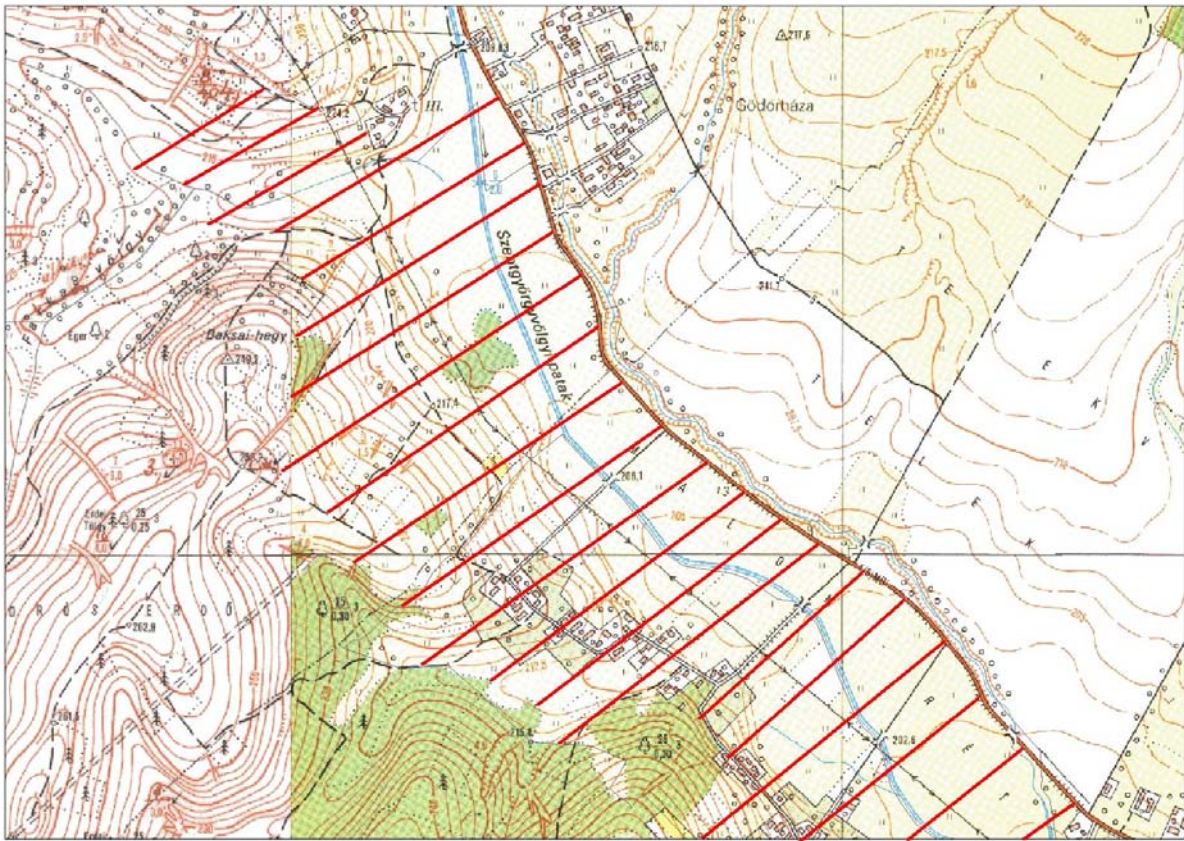
The location of Órség National Park



The site at Kercaszomor, Kerca Valley



The surveyed area at Bajánsenye, Kerca Valley



The sites at Magyarszombatfa and Velemér (Szentgyörgy Valley)

Appendix 2.

Őrség National Park Butterflies Report I.

Genus Species		30/7/06	30/7/06	31/7/06	31/7/06	31/7/06	31/7/06	31/7/06	31/7/06	31/7/06	31/7/06	31/7/06	31/7/06
		KERCASZOMOR 1	KERCASZOMOR 2	SZALA VALLEY 1	SZALA VALLEY 2	SZALA VALLEY 3	SZALA VALLEY 4	SZALA VALLEY 5 Plantation	SZALA VALLEY 6	SZALA VALLEY 7	SZALA VALLEY Hut	SZALA FŐ- PITYERSZER Short Grass Meadow	SZALA FŐ- PITYERSZER Short Cut Grass Meadow
		46°47'04.1" E016 18'56.7"	46°52'52.0" E016 19'23.7"	46°50'38.1" E016 22'545.9"	46°52'54.7" E016 19'17.3"	46°52'59.3" E016°19'020"	46°52'58.0" E016°18'54.6"	46°53'04.7" E016°18'59.3"	46°52'25.5" E016°18'14.5"	46°52'10.9" E016°18'17.5"	46°51'56.0" E016°18'27.1"	46°51'49.6" E016°19'36.5"	46°51'51.3" E016°19'39.3"
Erynnis tages	Dingy Skipper	+									+	+	+
Carcharodus alceae	Mallow Skipper												
Carcharodus lavatherae	Marbled Skipper												
Carcharodus floccifera	Tufted Marbled Skipper	+											
Pyrgus malvae	Grizzled Skipper			+			+						
Pyrgus alveus	Large Grizzled Skipper												
Heteropterus morpheus	Large Chequered Skipper	+	+			+	+	+	+				
Thymelicus lineola	Essex Skipper										+		
Thymelicus sylvestris	Small Skipper						+		+				

<i>Hesperia comma</i>	Silver-spotted Skipper												
<i>Ochlodes sylvanus</i>	Large Skipper		+	+	+	+	+	+	+	+	+		
<i>Iphiclides podalirius</i>	Scarce Swallowtail	+			+							+	
<i>Papilio machaon</i>	Swallowtail	+											
<i>Leptidea sinapis</i> complex	Wood White		+								+	+	
<i>Pieris brassicae</i>	Large White			+									
<i>Pieris rapae</i>	Small White	+	+			+			+				+
<i>Pieris napi</i>	Green-veined White	+	+		+				+	+	+		
<i>Colias hyale</i>	Pale Clouded Yellow												
<i>Colias croceus</i>	Clouded Yellow	+										+	+
<i>Gonepteryx rhamni</i>	Brimstone	+							+	+		+	
<i>Hamearis lucina</i>	Duke of Burgundy Fritillary	+											
<i>Lycaena phlaeas</i>	Small Copper	+											
<i>Lycaena dispar</i>	Large Copper	+	+										+
<i>Lycaena virgaureae</i>	Scarce Copper	+				+				+	+	+	+
<i>Lycaena tityrus</i>	Sooty Copper	+		+		+	+				+	+	
<i>Lycaena hippothoe</i>	Purple-edged Copper												
<i>Thecla betulae</i>	Brown Hairstreak	+											
<i>Everes argiades</i>	Short-tailed Blue	+	+					+	+		+	+	+
<i>Everes alcetas</i>	Provençal Short-tailed Blue												
<i>Cupido minimus</i>	Small Blue												
<i>Celastrina argiolus</i>	Holly Blue					+							
<i>Maculinea teleius</i>	Scarce Large Blue	+	+	+	+	+	+		+	+	+	+	
<i>Maculinea nausithous</i>	Dusky Large Blue	+	+	+	+	+	+		+	+	+	+	
<i>Maculinea alcon</i>	Alcon Blue	+		E	E	+	E						
<i>Plebeius argus</i>	Silver-studded Blue		+					+					
<i>Plebeius idas</i>	Idas Blue			+						+	+		
<i>Plebeius argyrognomon</i>	Reverdin's Blue		+										
<i>Aricia agestis</i>	Brown Argus	+											

Cyaniris semiargus	Mazarine Blue												
Polyommatus icarus	Common Blue	+							+		+	+	+
Hamearis lucina	Duke of Burgundy Fritillary	+											
Argynnis paphia	Silver-washed Fritillary	+	+	+	+	+	+	+	+	+	+	+	
Argynnis aglaja	Dark Green Fritillary			+		+			+		+		
Argynnis adippe	High Brown Fritillary	+		+	+			+	+	+			
Issoria lathonia	Queen of Spain Fritillary	+											
Brenthis daphne	Marbled Fritillary	+											
Boloria euphrosyne	Pearl-bordered Fritillary	+											
Boloria selene	Small Pearl-bordered Fritillary	+			+	+	+	+	+	+		+	
Vanessa atalanta	Red Admiral	+		+					+				
Vanessa cardui	Painted Lady	+											
Inachis io	Peacock	+											
Polygonia c-album	Comma		+						+				
Araschnia levana	Map Butterfly	+	+							+	+		
Euphydryas aurinia	Marsh Fritillary												
Melitaea didyma	Spotted Fritillary												
Melitaea aurelia	Nickerl's Fritillary	+					+						+
Melitaea britomartis	Assmann's Fritillary												
Melitaea athalia	Heath Fritillary	+	+	+			+				+	+	+
Neptis sappho	Common Glider	+											
Apatura iris	Purple Emperor	+											
Pararge aegeria	Speckled Wood	+	+							+	+		
Lasiommata maera	Large Wall Brown							+					
Coenonympha arcania	Pearly Heath												
Coenonympha glycerion	Chestnut Heath											+	
Coenonympha pamphilus	Small Heath	+					+	+	+			+	+
Aphantopus hyperantus	Ringlet	+	+	+		+	+	+	+	+	+	+	
Maniola jurtina	Meadow Brown	+	+	+	+	+	+	+	+	+	+	+	+

Melanargia galathea	Marbled White	+	+								+	+	
Minois dryas	Dryad	+	+	+	+	+	+	+	+	+	+	+	
Brenthesia circe	Great Banded Grayling			+									
Hipparchia fagi	Woodland Grayling										+		

Őrség National Park Butterfly Report II.

Genus Species		30/7/06	31/7-01/8/06	01/8/06	02/8/06	02/8/06
		BAJÁSENYE KERKA VALLEY	MAGYARSZOMBATFA SZENTGYÖRGY VALLEY	ÓRISZENTPÉTER KESRÜSZER	APÁTISTVÁNFAALVA	KÉTVÖLGY
Erynnis tages	Dingy Skipper	+				
Carcharodus alceae	Mallow Skipper					
Carcharodus lavatherae	Marbled Skipper					
Carcharodus floccifera	Tufted Marbled Skipper	+	+			
Pyrgus malvae	Grizzled Skipper		+			+
Pyrgus alveus	Large Grizzled Skipper		+			
Heteropterus morpheus	Large Chequered Skipper	+	+			+
Thymelicus lineola	Essex Skipper					
Thymelicus sylvestris	Small Skipper					+
Hesperia comma	Silver-spotted Skipper		+		+	+
Ochlodes sylvanus	Large Skipper					+
Iphiclides podalirius	Scarce Swallowtail	+				
Papilio machaon	Swallowtail	+	+			
Leptidea sinapis complex	Wood White		+	+		
Pieris brassicae	Large White					
Pieris rapae	Small White	+	+	+		
Pieris napi	Green-veined White		+	+		
Colias hyale	Pale Clouded Yellow			+		
Colias croceus	Clouded Yellow			+		+
Gonepteryx rhamni	Brimstone		+			
Hamearis lucina	Duke of Burgundy Fritillary	+	+			
Lycaena phlaeas	Small Copper			+		
Lycaena dispar	Large Copper		+	+	+	+
Lycaena virgaureae	Scarce Copper		+			
Lycaena tityrus	Sooty Copper	+	+		+	
Lycaena hippothoe	Purple-edged Copper		+			+
Thecla betulae	Brown Hairstreak					
Everes argiades	Short-tailed Blue		+	+	+	

Everes alcetas	Provençal Short-tailed Blue					
Cupido minimus	Small Blue					
Celastrina argiolus	Holly Blue		+			
Maculinea teleius	Scarce Large Blue	+	+	+	+	+
Maculinea nausithous	Dusky Large Blue	+	+	+	+	+
Maculinea alcon	Alcon Blue					
Plebeius argus	Silver-studded Blue		+		+	
Plebeius idas	Idas Blue			+	+	+
Plebeius argyrognomon	Reverdin's Blue		+			
Aricia agestis	Brown Argus			+		
Cyaniris semiargus	Mazarine Blue		+	+		
Polyommatus icarus	Common Blue		+	+		
Hamearis lucina	Duke of Burgundy Fritillary					
Argynnis paphia	Silver-washed Fritillary		+			
Argynnis aglaja	Dark Green Fritillary					+
Argynnis adippe	High Brown Fritillary					
Issoria lathonia	Queen of Spain Fritillary					
Brenthis daphne	Marbled Fritillary					
Boloria euphrosyne	Pearl-bordered Fritillary					
Boloria selene	Small Pearl-bordered Fritillary	+	+	+	+	+
Vanessa atalanta	Red Admiral	+	+	+		
Vanessa cardui	Painted Lady	+	+	+		
Inachis io	Peacock	+	+			
Polygonia c-album	Comma	+	+			
Araschnia levana	Map Butterfly	+	+	+		
Euphydryas aurinia	Marsh Fritillary				+	
Melitaea didyma	Spotted Fritillary		+			
Melitaea aurelia	Nickerl's Fritillary		+	+		
Melitaea britomartis	Assmann's Fritillary					
Melitaea athalia	Heath Fritillary	+	+	+	+	+
Neptis sappho	Common Glider		+			
Apatura iris	Purple Emperor					
Pararge aegeria	Speckled Wood		+			
Lasiommata maera	Large Wall Brown			+		
Coenonympha arcania	Pearly Heath					
Coenonympha glycerion	Chestnut Heath					
Coenonympha pamphilus	Small Heath		+			+
Aphantopus hyperantus	Ringlet	+	+	+	+	
Maniola jurtina	Meadow Brown	+	+	+	+	+
Melanargia galathea	Marbled White	+	+		+	
Minois dryas	Dryad	+	+	+	+	+

Brenthesia circe	Great Banded Grayling					
Hipparchia fagi	Woodland Grayling					

Appendix 3.

FAMILY	SPECIES	ENGLISH NAME
<i>Sphingidae</i>	<i>Hyloicus pinastri</i>	Pine Hawkmoth
<i>Sphingidae</i>	<i>Dilephila porcellus</i>	Small Elephant Hawkmoth
<i>Sphingidae</i>	<i>Deilephila elpenor</i>	Large Elaphant Hawkmoth
<i>Sphingidae</i>	<i>Smerinthus ocellata</i>	Eyed Hawkmoth
<i>Sphingidae</i>	<i>Laothoe populi</i>	Poplar Hawkmoth
<i>Sphingidae</i>	<i>Macroglossum stellatarum</i>	Hummingbird hawkmoth
<i>Lasiocampidae</i>	<i>Lasiocampa quercus</i>	Oak eggar
<i>Lasiocampidae</i>	<i>Dendrolimus pini</i>	Pine-tree Lappet
<i>Saturniidae</i>	<i>Antheraea yamamai</i>	
<i>Drepanidae</i>	<i>Drepana curvatula</i>	Dusky Hook-tip
<i>Drepanidae</i>	<i>Drepana falcatoria</i>	Pebble Hook-tip
<i>Drepanidae</i>	<i>Falcaria lacertinaria</i>	Scalloped Hook-tip
<i>Drepanidae</i>	<i>Sabra harpagula</i>	Scarce Hook-tip
<i>Thyatiridae</i>	<i>Thyatira batis</i>	Peach Blossom
<i>Thyatiridae</i>	<i>Habrosyne pyritoides</i>	Buff Arches
<i>Thyatiridae</i>	<i>Tethea or</i>	Poplar Lutestring
<i>Geometridae</i>	<i>Geometra papilionaria</i>	Large Emerald
<i>Geometridae</i>	<i>Chlorissa viridata</i>	
<i>Geometridae</i>	<i>Jodis lactearia</i>	LittleEmerald
<i>Geometridae</i>	<i>Cyclophora albipunctata</i>	Birch Mocha
<i>Geometridae</i>	<i>Cyclophora punctaria</i>	Maidens Blush
<i>Geometridae</i>	<i>Scopula immorata</i>	Lewes Wave
<i>Geometridae</i>	<i>Scopula nigropunctata</i>	Sub-angled Wave
<i>Geometridae</i>	<i>Scopula immutata</i>	Small Cream Wave
<i>Geometridae</i>	<i>Idaea ochrata</i>	Bright Wave
<i>Geometridae</i>	<i>Idaea aversata</i>	Riband Wave
<i>Geometridae</i>	<i>Xanthorhoe designata</i>	Flame Carpet
<i>Geometridae</i>	<i>Xanthorhoe spadicearia</i>	Red Twin-spot Carpet
<i>Geometridae</i>	<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet
<i>Geometridae</i>	<i>Catarhoe rubidata</i>	Ruddy Carpet
<i>Geometridae</i>	<i>Epirrhoe tristata</i>	Small Argent and Sable
<i>Geometridae</i>	<i>Mesoleuca albicillata</i>	Beautiful Carpet
<i>Geometridae</i>	<i>Cosmorhoe ocellata</i>	Purple Bar
<i>Geometridae</i>	<i>Euphyia unangulata</i>	Sharp-angled Carpet
<i>Geometridae</i>	<i>Perizoma alchemillata</i>	Small Rivulet
<i>Geometridae</i>	<i>Chloroclystis v-ata</i>	V-Pug
<i>Geometridae</i>	<i>Eupithecia centaureata</i>	Lime-speck Pug
<i>Geometridae</i>	<i>Eupithecia succenturiata</i>	Bordered Pug
<i>Geometridae</i>	<i>Euchoeca nebulata</i>	Dingy Shell
<i>Geometridae</i>	<i>Asthena albulata</i>	Small White Wave
<i>Geometridae</i>	<i>Minoa murinata</i>	Drab Looper
<i>Geometridae</i>	<i>Lomasipilis marginata</i>	Clouded Border
<i>Geometridae</i>	<i>Ligdia adustata</i>	Scorched Carpet
<i>Geometridae</i>	<i>Macaria notata</i>	Peacock Moth
<i>Geometridae</i>	<i>Macaria alternata</i>	Sharp-angled Peacock Moth
<i>Geometridae</i>	<i>Macaria liturata</i>	Tawny-barred Angle

Geometridae	<i>Chiasmia clathrata</i>	Latticed Heath
Geometridae	<i>Ennomos quercinaria</i>	August Thorn
Geometridae	<i>Selenia tetralunaria</i>	Purple Thorn
Geometridae	<i>Crocallis elinguar</i>	Scalloped Oak
Geometridae	<i>Hypomecis punctinalis</i>	Pale Oak Beauty
Geometridae	<i>Ectropis crepuscularia</i>	Engrailed
Geometridae	<i>Ematurga atomaria</i>	Common Heath
Geometridae	<i>Cabera pusaria</i>	Common White Wave
Geometridae	<i>Cabera exanthemata</i>	Common Wave
Geometridae	<i>Lomographa bimaculata</i>	White-pinion Spotted
Geometridae	<i>Lomographa temerata</i>	Clouded Silver
Notodontidae	<i>Phalera bucephala</i>	Buff Tip
Notodontidae	<i>Furcula bicuspis</i>	Alder Kitten
Notodontidae	<i>Furcula furcula</i>	Poplar Kitten
Notodontidae	<i>Stauropus fagi</i>	
Notodontidae	<i>Notodonta ziczac</i>	Pebble Prominent
Notodontidae	<i>Drymonia querna</i>	
Notodontidae	<i>Drymonia obliterata</i>	
Notodontidae	<i>Harpyia milhauseri</i>	
Notodontidae	<i>Ptilodon capucina</i>	Coxcomb Prominent
Notodontidae	<i>Spatalia argentina</i>	
Notodontidae	<i>Gluphisia crenata</i>	Dusky Marbled Brown
Notodontidae	<i>Clostera curtula</i>	Chocolate-tip
Notodontidae	<i>Clostera anastomosis</i>	
Notodontidae	<i>Clostera pigra</i>	Small Chocolate-tip
Lymantriidae	<i>Arctornis l-nigrum</i>	Black V Moth
Lymantriidae	<i>Lymantria dispar</i>	Gypsy Moth
Lymantriidae	<i>Lymantria monacha</i>	Black Arches
Lymantriidae	<i>Euproctis similis</i>	Yellow-tail
Arctiidae	<i>Miltochrista miniata</i>	Rosy Footman
Arctiidae	<i>Lithosia quadra</i>	Four-spotted Footman
Arctiidae	<i>Eilema sororcula</i>	orange Footman
Arctiidae	<i>Eilema griseola</i>	Dingy Footman
Arctiidae	<i>Eilema depressa</i>	Buff Footman
Arctiidae	<i>Eilema complana</i>	Scarce Footman
Arctiidae	<i>Spilosoma urticae</i>	Water Ermine
Arctiidae	<i>Diacrisia sannio</i>	Clouded Buff
Arctiidae	<i>Arctia caja</i>	Garden Tiger
Nolidae	<i>Meganola albula</i>	Kent Black Arches
Noctuidae	<i>Trisateles emortualis</i>	Olive Crescent
Noctuidae	<i>Herminia tarsicrinalis</i>	Shaded Fan-foot
Noctuidae	<i>Herminia grisealis</i>	Small Fan-foot
Noctuidae	<i>Rivula sericealis</i>	Straw Dot
Noctuidae	<i>Laspeyria flexula</i>	Beautiful hook-tip
Noctuidae	<i>Earias clorana</i>	Cream-bordered Green-pea
Noctuidae	<i>Pseudoips prasinana</i>	Green Silver-lines
Noctuidae	<i>Bena bicolorana</i>	Scarce Silverlines
Noctuidae	<i>Panthea coenobita</i>	
Noctuidae	<i>Colocasia coryli</i>	Nut-tree Tussock
Noctuidae	<i>Acronicta leporina</i>	Miller
Noctuidae	<i>Acronicta alni</i>	Alder Moth
Noctuidae	<i>Acronicta strigosa</i>	Mash Dagger

Noctuidae	<i>Craniophora ligustri</i>	Coronet
Noctuidae	<i>Emmelia trabealis</i>	Spotted Sulphur
Noctuidae	<i>Deltote bankiana</i>	Silver Barred
Noctuidae	<i>Diachrysia chrysitis</i>	Burnished Brass
Noctuidae	<i>Diachrysia zosimi</i>	
Noctuidae	<i>Autographa gamma</i>	Silver Y
Noctuidae	<i>Amphipyra pyramidea</i>	Copper Underwing
Noctuidae	<i>Lacanobia thalassina</i>	Pale-shouldered Brocade
Noctuidae	<i>Lacanobia oleracea</i>	Bright-line Brown-eye
Noctuidae	<i>Mythimna pallens</i>	Common Wainscot
Noctuidae	<i>Elaphria venustula</i>	Rosy Marbled
Noctuidae	<i>Trachea atriplicis</i>	Orache Moth
Noctuidae	<i>Actinotia polyodon</i>	Purple Cloud
Noctuidae	<i>Callopistria juvenina</i>	Latin
Noctuidae	<i>Cosmia trapezina</i>	Dun-bar
Noctuidae	<i>Axylia putris</i>	Flame
Noctuidae	<i>Ochropleura plecta</i>	Flame Shoulder
Noctuidae	<i>Xestia c-nigrum</i>	Setaceous Hebrew Character
Noctuidae	<i>Agrotis exclamationis</i>	Heart and Dart