The Lepidoptera fauna of three brackish salt marshes including two species new for the Belgian fauna (Lepidoptera)

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Abstract. An inventory of the Lepidoptera of three brackish salt marshes between Antwerp and the Belgian-Dutch border was made in the period 2001–2003. The fauna is compared with that of two salt marshes alongside the Scheldt estuary near Terneuzen: Zuidgors and Paulinaschor. In the three investigated brackish marshes adults were collected and pre-adult stages were reared, and as a result 116 species were recorded, of which 38 are typical for the tidal zone ecosystem. *Coleophora saxicolella* (Duponchel, 1843) and *Monochroa moyses* Uffen, 1991 are new for the Belgian fauna.

Samenvatting. De vlinderfauna van drie brakwaterschorren langs de Schelde inclusief twee nieuwe soorten voor de Belgische fauna (Lepidoptera)
Drie brakwaterschorren tussen Antwerpen en de Belgisch-Nederlandse grens werden faunistisch onderzocht in de periode 2001–2003. De fauna hiervan wordt vergeleken met die van een tweetal schorren langs het Schelde-estuarium in de buurt van Terneuzen: het Zuidgors en het Paulinaschor. In de drie onderzochte brakwaterschorren werden niet alleen adulten verzameld maar ook pre adulte stadia verzameld en uitgekweekt hetgeen resulteerde in de vondst van in totaal 116 vlindersoorten waarvan er 38 kenmerkend zijn voor de getijzone als ecosysteem. *Coleophora saxicolella* (Duponchel, 1843) en *Monochroa moyses* Uffen, 1991 zijn nieuw voor de Belgische fauna.

Résumé. La faune de lépidoptères dans trois schorres salins le long de l'Escaut inclusif deux espèces nouvelles pour la faune belge (Lepidoptera)
La faune de trois schorres salins entre Anvers et la frontière entre la Belgique et l'Hollande furent étudié dans la période 2001–2003. Le résultat est comparé avec la faune de deux schorres le long de l'estuaire de l'Escaut à Terneuzen: le Zuidgors et le Paulinaschor. Dans les trois schorres salins étudiés, non seulement les adultes furent collectés, mais aussi les stades pré imaginaires, ce qui a permis d'établir une liste de 116 espèces de lépidoptères dont 38 sont typiques pour la zone de marée. *Coleophora saxicolella* (Duponchel, 1843) et *Monochroa moyses* Uffen, 1991 sont nouveaux pour la faune belge.

Key words: Belgium – *Coleophora saxicolella* – ecology – faunistics – *Monochroa moyses* – new record – salt marshes.

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Introduction

During the period 2001–2003 a faunistic inventory was carried out in three brackish marshes alongside the River Scheldt north between Antwerp and the Dutch-Belgian border: schor Oude Doel, Groot Buitenschoor in the neighbourhood of the village of Zandvliet and Galgenschoor near Lillo. The marsh of Oude Doel connects with that of Saeftinghe, which together form the largest brackish marsh in Western Europe. The Groot Buitenschoor marsh is the remainder of vast salt marshes which have almost totally disappeared as a result of reclamation and construction of industrial areas during the last century.

The marsh at Lillo is very old and appears in its present shape on old maps from the seventeenth century. During the last decade the Galgenschoor marsh has gradually become dominated by common reed vegetation, and some of the typically halophile plant species have disappeared; in another part they can only be found on a small edge between the Scheldt water and the reed marsh.

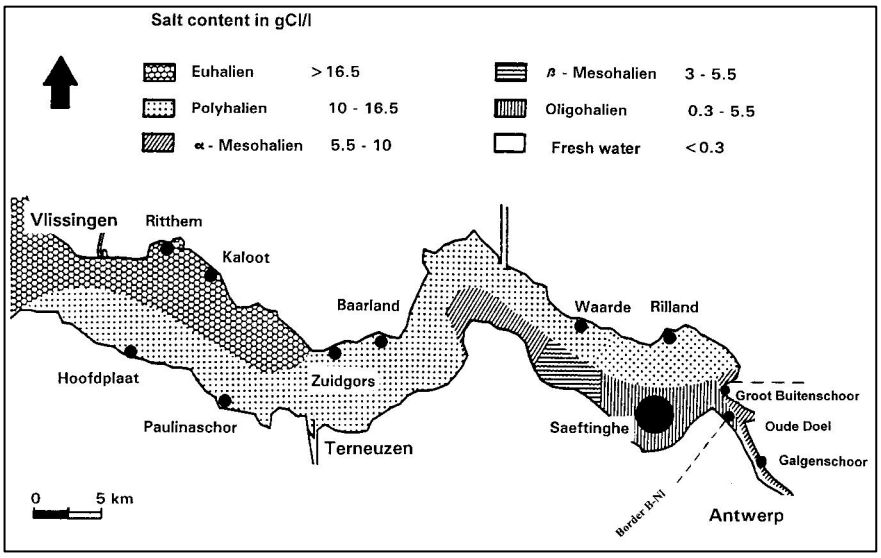

Fig. 1. Division of the western Scheldt according to the salinity.

The aim of the investigation was to collect data to compare the fauna of different sites alongside the Scheldt estuary. The faunistic records will be compared with those of two salt marshes which are further downstream near Terneuzen. The first is Paulinaschor at the southern bank and the other is Zuidgors at the northern bank (fig. 1). The minimum and maximum salinity of the water varies because of the varying influence of the salty sea water and the fresh water of the river Scheldt itself. In general the average salinity is of more importance on the vegetation composition and its structure (Hoffmann 1993), hence on the insect species composition. Therefore some faunistic differences could be expected.

Material and methods

Adult moths have been netted by day and in the evening at dusk. At night a 160 Watt ML-lamp and a 125 Watt HPL-lamp were used. Host plants were inspected for the presence of caterpillars. Those collected in September-October were bred through in a flower pot which was closed at its top with thin curtain. The pot was filled with a plastic layer in which some holes were made to get rid of the excess of rain water, and on which a layer of sand was placed. Plant material and caterpillars were put on the sand and the flowerpot was placed outside until April-June depending on the species group, after which it was taken indoors and carefully observed until the moths emerged.

Several species were reared from tidal litter deposited in the storm flood zone among the edges of the investigated sites. This "veek" material was collected in March, put in cages and followed indoors.

A proportion of the moths which were caught at night do not originate from the vegetation around the salt marsh, are unable to complete their lifecycle on the marsh, and therefore all the data were interpreted afterwards to belong to the salt marsh or not, depending on the knowledge of their life cycle. The conclusions were based on twenty years of experience with the faunal compilation of other nearby Dutch salt marshes (Jansen 2001) and knowledge of the biology of the individual species.

A comparison has been made with the faunistics of two salt marshes alongside the river Scheldt near Terneuzen. Het Zuidgors is a wide and extensive salt marsh near the village of Ellewoutsdijk in which, since 1980, erosion is much more important than sedimentation. The saltmarsh Paulinschor west of Terneuzen is the remainder of a vast complex of salt marshes in the former Braakman estuary. It has an erosion border between marsh and mud flat, but in contrast with the Zuidgors, sedimentation occurs on the mud flat area.

Results and discussion

In the three investigated sites 116 species were found (table 1), including 38 species which can complete their life cycle in the tidal zone and of which the caterpillars live on halophile or salt-tolerant hostplants. The other species however must be regarded as visitors, the plant hosts of which are not part of the ecosystem. Although these species may be highly polyphagous, their pre-adult stages have never been found or recorded from halophile plant species. The host plant is an important factor in deciding whether a species can be regarded as an element of the fauna, but many Lepidoptera have several hosts. Most polyphagous species cannot survive in salt or brackish marsh conditions, but pre-adult stages of *Autographa gamma* (Linnaeus), *Discestra trifolii* (Hufnagel) and *Lacanobia oleracea* (Linnaeus) have been regularly found in the tidal zone.

In making a comparison of the species composition of the three investigated brackish marshes with the two Dutch salt marshes, three species groups can be recognized:

Species which are found in salt marshes but do not occur in the three investigated brackish marshes, because the hostplants like *Limonium vulgare*, *Atriplex littoralis*, *Atriplex portulacoides* and *Seriphidium maritimum* are not present. Other hostplant species like *Suaeda maritima*, *Salicornia europaea* and *Plantago maritima* are present but only in small numbers or small areas, and Lepidoptera species which are associated with them are e.g.: *Goniodoma limoniella* (Stainton), *Scrobipalpa instabilella* (Douglas), *S. samadensis* (Pfaffenzeller), *Coleophora salicorniae* Heinemann & Wocke, *C. salinella* Stainton, *Agdistis bennetii* (Curtis) and *Eucosma lacteana* (Treitschke). All these species are monophagous and dependent on the presence of one host. Following extinction of small populations, recolonization is dependent on the distance from neighbouring populations and their mobility. Some of these species, such as *Elachista argentella* (Clerck), *Coleophora salicorniae*, *Scrobipalpa salinella* (Zeller), *Eupithecia centaureata* ([Denis & Schiffermüller]) and *Discestra*

trifolii have not been found on the three brackish salt marshes, but their presence may be expected.

Species which occur in brackish marshes but not in true saltmarsh. This applies only to lepidopterous species which live on *Phragmites australis* (common reed). Two factors have been suggested to explain their presence. The number of inundations is lower than in other marshes as is observed in the brackish marsh of Ouden Doel which is only submerged in 15–46% of the high waters (Hoffmann 1993). The second is the lower salinity of the environment which contributes to an increase in reed stem width which is on average 8 mm in brackish marshes and 4.5 mm in salt marshes (Hoffmann *l.c.*) and likely of influence on the chance of survival of caterpillars living in the stem. Species which may benefit from this factor are *Archanara geminipuncta* (Haworth), *Archanara dissoluta* (Treitschke), *Rhizedra lutosa* (Hübner), *Mythimna obsoleta* (Hübner), *Chilo phragmitella* (Hübner), *Arenostola phragmitidis* (Hübner) and *Chilodes maritima* (Tauscher). *Mythimna straminea* (Treitschke) and *Simyra albovenosa* (Goeze) have more than one host plant but for both *Phragmites* is the main host.

Polyphagous species which are found both in brackish and in salt marshes living on low herbaceous plants including grasses. Examples are *Lacanobia oleracea*, *Crambus perlella* (Scopoli), *Cnephasia longana* (Haworth) and *Autographa gamma*. Plant species which occur in both marsh types like *Aster tripolium* and *Atriplex prostrata* are host for *Cucullia asteris* ([Denis & Schiffermüller]), *Bucculatrix maritima* Stainton, *Coleophora asteris* Mühlig, *C. atriplicis* Meyrick, *C. saxicolella* (Duponchel) and *C. adspersella* Benander.

***Scrobipalpa nitentella* (Fuchs, 1902)**. An adult male was collected at the Galgenschoor marsh on 09.vii.2003 (slide number M.G.M. Jansen 1228). The species has only been found once (Jansen 2002) and recorded from the right border of the coastal salt marsh of the river Yzer at Nieuwpoort. One of the hostplants is *Atriplex prostrata* which is present in the finding site and common in the other two sites where the moth is also to be expected.

***Coleophora saxicolella* (Duponchel, 1843)**. New for the Belgian fauna. Oude Doel: *Atriplex prostrata*, 15.ix.2002 five larvae which gave, after overwintering, two adults on vii.2003 (slide number M.G.M. Jansen 1214); Groot Buitenschoor: 24.ix.2002, on *Atriplex prostrata* which gave two adults on 22.vii.2003 1 ex. and 10.viii.2003 1 ex. The egg is laid on a floret of *Atriplex* sp. and *Chenopodium* sp. The larva makes a case which is indistinguishable from those of *C. sternipennella*, *C. versurella* or *C. vestianella* and feeds in September and October on the seeds and leaves of its host prior to winter diapause. It pupates in June-July. *C. saxicolella* is widespread in Europe and Asia Minor. In the Netherlands it has been found both on coastal and inland sites. The species is already recorded for the Netherlands by Snellen (1882, as *C. annulatella* Tengström) and it is widespread and locally common throughout much of the British Isles (Emmet *et al*. 1996: 306).

***Monochroa moyses* Uffen, 1991**. New for the Belgian fauna. Oude Doel: 25.vi.2001 1adult; Groot Buitenschoor: 25.vi.2001 1 adult. Both specimens were flying around their host plant *Bolboschoenus maritimus*; Oude Doel: 15.ix.2002 10 mines, Groot Buitenschoor: 15.ix.2002 2 mines. In both cases the mines were found in the leaves of *Bolboschoenus maritimus*. The larva mines the leaves from mid August-October; sometimes it leaves the mine or overwinters in the mine and pupates in spring (Emmet & Langmaid 2002). The species was described in 1991 and up to now it has only been found in England and The Netherlands. The species was earlier recorded in the brackish marshes from Rilland and Saeftinghe not far from the Belgian-Dutch border.

***Coleophora adspersella* Benander, 1939**. Groot Buitenschoor: 15.ix.2002, *Atriplex littoralis* 1 larva, adult 17.vi.2003; 16.iv.2003 1 ex. in drift detritus, adult June 2003 (slide number M.G.M. Jansen 1207). The larvae live in a case on the seeds of *Atriplex* sp., *Chenopodium* sp. or *Suaeda* sp. from September till mid-October. They leave the foodplant and pupate in the case in June-July (Emmet *et al*. 1996). The species has been found both in salt marshes and on inland sites in the Netherlands during the last two decades and cannot be regarded as a rare species nowadays. Its case is fairly striking as it is 7–8 mm in length and thus longer than cases of all other salt marsh species. It is obvious by its pale brown longitudinal stripes which resembles those of *C. deviella* Zeller. The author has regularly looked for lepidopterous larvae since 1980 and its occurrence on Dutch salt marshes since 1996 suggests that it is a new element in this habitat. The species is recently recorded as new for the Belgian fauna (De Prins & Spronck 2004).

References

De Prins, W., 1998. Catalogue of the Lepidoptera of Belgium. — *Studiedocumenten van het Koninklijk Belgisch Instituut voor Natuurwetenschappen* **91**: 1–236.

De Prins, W. & Spronck, R., 2004. Four new species for the Belgian fauna (Lepidoptera: Gracillariidae, Coleophoridae and Tortricidae). — *Phegea* **32**(2): 49–54.

Emmet, A. M., (ed.), 1996. *The Moths and Butterflies of Great Britain and Ireland 3. Yponomeutidae – Elachistidae*. — Harley Books, Essex, 452 pp.

Emmet, A. M. & J. R. Langmaid (eds.), 2002. *The Moths and Butterflies of Great Britain and Ireland 4, part 2. Gelechiidae*. — Harley Books, Essex, 277 pp.

Hoffmann, M., 1993. Vegetatiekundig-ecologisch onderzoek van de buitendijkse gebieden langs de Zeeschelde met vegetatiekartering. — Universiteit Gent, 223 pp.

Jansen, M. G. M., 2001. Die Microlepidopterenfauna der Salzwiesen der niederländischen Küstenregion. In: S. Löser (red.), *Verhandlungen Westdeutscher Entomologentag 2000 Düsseldorf. Löbbecke-Museum*, Düsseldorf, 136–140.

Jansen, M. G. M., 2002. *Scrobipalpa nitentella*, nieuw voor de Belgische fauna (Lepidoptera: Gelechiidae). — *Phegea* **30**(4): 192.

Table 1. Nomenclature and systematic order follow De Prins (1998). **Bold** species names refer to species which can propagate in the tidal zone in salty or brackish conditions. l = light trapping, r = rearing of caterpillars, d = catching adults at dusk, t = tidal litter collected. Asterisk * = species new for the Belgian fauna. Host plants of monophagous moth species are accompanied by the species name whereas the rest has been indicated as genus. 1 = Groot Buitenschoor, 2 = salt marsh Oude Doel, 3 = Galgenschoor, 4 = Zuidgors + Paulinaschor.

	1	2	3	4	host plants
Number of visits	6	6	3	103	
surface in ha	216	47	45	55 + 50	
chlorinity (average on year basis) Beeftink (1965)	mesohalien (3–10 gCl/l)	mesohalien (3–10 gCl/l)	mesohalien (3–10 gCl/l)	polyhalien	
methods	r,d,t	l (2×), r, d	l (1×), r, d	l, r, d	
species number	31	88	37	43	
halofyle species number	15	31	9		
Korscheltellus lupulinus				x	polyphagous
Whittleia retiella				x	Gramineae
Bucculatrix maritima	x	x	x	x	*Aster tripolium*
Bucculatrix bechsteinella			x		e.g. *Crataegus*
Phyllonorycter salicicolella		x			*Salix*
Yponomeuta padella		x		x	e.g. *Crataegus*
Yponomeuta evonymella				x	e.g. *Crataegus*
Ochsenheimeria taurella				x	Gramineae
Plutella xylostella	x	x		x	e.g. *Cakileae* and *Atriplex*
Agonopterix subpropinquella		x			o.a. *Cirsium*
Elachista cerusella				x	Gramineae
Elachista argentella				x	Gramineae
Biselachista scirpi		x			*Bolboschoenus maritimus*
Cosmiotes sp.				x	Gramineae
Goniodoma limoniella				x	*Limonium*
Coleophora flavipennella		x			*Quercus*
Coleophora trifolii				x	*Melilotus*
Coleophora asteris	x			x	*Aster tripolium*
Coleophora versurella	x	x		x	*Atriplex*
Coleophora atriplicis	x			x	*Atriplex*
Coleophora artemisiella				x	*Seriphidium*
Coleophora glaucicolella	x	x	x	x	*Juncus*
Coleophora adjunctella		x		x	*Juncus gerardii*
Coleophora saxicolella*	x	x		x	*Atriplex*
Coleophora adspersella	x	x		x	*Atriplex, Suaeda*
Coleophora salinella				x	*Atriplex*
Coleophora deviella				x	*Suaeda*
Coleophora salicorniae				x	*Salicornia*
Mompha epilobiella		x			*Epilobium hirsutum*
Chrysoesthia drurella	x		x		*Atriplex*
Eulamprotes wilkella				x	*Cerastium fontanum*
Monochroa moyses*	x	x		x	*Bolboschoenus maritimus*
Bryotropha terrella		x		x	mosses

Bryotropha senectella				x	mosses
Scrobipalpa acuminatella		x			*Cirsium*
Scrobipalpa instabilella				x	*Atriplex portulacoides*
Scrobipalpa obsoletella	x		x	x	*Atriplex*
Scrobipalpa nitentella		x	x	x	*Atriplex, Suaeda*, *Salicornia*
Scrobipalpa salinella				x	*Salicornia*
Brachmia rufescens				x	Gramineae
Phalonidia affinitana				x	*Aster tripolium*
Gymnidomorpha vectisana		x		x	*Triglochin maritima*
Agapeta hamana		x	x	x	*Carduus*, *Cirsium*
Aethes smeathmanniana				x	*Achillea*, *Centaurea*
Cochylis dubitana			x	x	Compositae e.g. *Senecio*
Tortrix viridana		x		x	Trees especially *Quercus*
Cnephasia longana		x		x	polyphagous e.g. *Aster*
Argyrotaenia ljungiana			x	x	polyphagous
Pandemis cerasana				x	polyphagous
Pandemis heparana				x	polyphagous
Aphelia paleana				x	polyphagous
Aphelia viburnana				x	polyphagous e.g. *Aster*
Clepsis spectrana		x		x	polyphagous e.g. *Aster*, *Limonium*
Bactra robustana	x	x		x	*Bolboschoenus maritimus*
Endothenia ericetana		x			*Stachys palustris*
Endothenia quadrimaculana			x	x	*Stachys palustris*
Celypha lacunana	x	x			polyphagous
Lobesia abscisana		x	x	x	*Cirsium arvense*
Eucosma hohenwartiana		x		x	*Centaurea*
Eucosma tripoliana	x	x		x	*Aster tripoliana*
Eucosma lacteana				x	*Seriphidium*
Eucosma metzneriana		x			*Artemisia vulgaris*
Gypsonoma dealbana				x	e.g. *Crataegus*
Gypsonoma aceriana				x	*Populus*
Epiblema foenella				x	*Artemisia vulgaris*
Emmelina monodactyla		x	x		*Calystegia, Convolvulus*
Agdistis bennettii				x	*Limonium vulgare*
Adaina microdactyla		x	x		*Eupatorium cannabinum*
Phycitodes maritima				x	*Senecio jacobaea, Achillea* and *Taraxacum*
Anerastia lotella				x	Gramineae
Scoparia ambigualis		x		x	mossen?
Chilo phragmitella		x			*Phragmites australis*
Chrysoteuchia culmella	x	x		x	Gramineae, e.g. *Elythrigia*, *Festuca*
Crambus lathoniellus				x	Gramineae
Crambus perlella	x	x	x	x	Gramineae, e.g.. *Elythrigia*, *Festuca*
Agriphila tristella	x		x		*Gramineae*

Agriphila selasella				x	Gramineae
Agriphila straminella			x	x	Gramineae, e.g. *Elythrygia*, *Festuca*
Agriphila geniculea	x		x	x	Gramineae
Pediasia aridella				x	Gramineae
Platytes alpinella				x	mosses
Evergestis extimalis			x		Cruciferae
Pyrausta despicata			x		*Plantago lanceolata, P. major*
Pyrausta aurata		x			Lamiaceae e.g. *Mentha*
Sitochroa palealis				x	e.g. *Daucus, Pastinaca, Heracleum*
Ostrinia nubilalis		x			polyphagous. *Atriplex*
Eurrhypara hortulata			x	x	especially *Urtica*
Pleuroptya ruralis		x			e.g. *Urtica*, *Chenopodium* and *Atriplex*
Nomophila noctuella	x		x		*Polygonum aviculare, Trifolium*
Euthrix potatoria				x	Gramineae
Smerinthus ocellata		x	x	x	e.g. *Salix, Malus*
Thymelicus sp		x	x	x	Gramineae
Colias hyale	x				Fabaceae
Pieris brassicae	x	x		x	e.g. *Sisymbrium, Cakile*
Pieris rapae	x	x		x	Cruciferae.
Pieris napi				x	Cruciferae
Aricia agestis				x	*Erodium*
Polyommatus icarus	x	x		x	Fabaceae e.g. *Trifolium*
Pararge aegeria	x				Gramineae
Lasiommata megera				x	Gramineae
Coenonympha pamphilus	x			x	Gramineae
Pyronia tithonus			x	x	Gramineae
Maniola jurtina		x		x	Gramineae
Vanessa atalanta		x		x	especially *Urtica*
Cynthia cardui		x		x	*Cirsium, Arctium, Urtica*
Inachis io	x	x		x	*Urtica*
Aglais urticae	x			x	*Urtica*
Lomaspilis marginata		x		x	*Populus, Salix*
Macaria notata		x			*Betula*
Macaria clathrata				x	*Trifolium, Lotus*
Epirrhoe alternata		x			*Galium*
Scopula immutata		x			*Filipendula, Valeriana*
Campaea margaritata				x	polyphagous
Idaea seriata			x		*Hedera*
Idaea fuscovenosa				x	polyphagous
Idaea dimidiata				x	o.a. *Anthriscus*
Xanthorhoe ferrugata		x			polyphagous low plants
Cidaria fulvata				x	*Rosa canina*
Eupithecia centaureata				x	polyphagous e.g. *Aster*
Eupithecia vulgata				x	polyphagous
Eupithecia simpliciata				x	*Atriplex*
Aplocera sp.				x	*Hypericum*
Notodonta tritophus				x	*Populus*

Cerura vinula				x	*Populus, Salix*
Phalera bucephala					trees and shrubs
Lymantria dispar		x			polyphagous trees
Simyra albovenosa	x				e.g. *Phragmites*, *Aster*
Macrochilo cribrumalis		x			Gramineae, Cyperaceae
Autographa gamma		x		x	polyfagous e.g. *Aster*
Deltote bankiana	x		x	x	Gramineae
Cucullia asteris	x	x		x	*Aster*
Caradrina morpheus		x		x	polyphagous low plants
Paradrina clavipalpis			x		Gramineae, *Plantago*
Hoplodrina octogenaria		x		x	polyphagous low plants
Hoplodrina ambigua			x		polyphagous low plants
Chilodes maritima		x			*Phragmites australis*
Thalpophila matura			x		Gramineae
Apamea monoglypha		x		x	Gramineae
Apamea lithoxylaea		x			Gramineae
Apamea sordens		x		x	Gramineae
Oligia strigilis		x		x	*Dactylis, Phalaris*
Oligia fasciuncula				x	Gramineae
Mesoligia furuncula		x	x	x	Gramineae
Mesapamea secalis				x	Gramineae
Luperina testacea	x				Gramineae
Rhizedra lutosa			x		*Phragmites australis*
Amphipoea oculea		x			Gramineae
Amphipoea fucosa		x			Gramineae e.g. *Festuca*
Hydraecia micacea		x			*Bolboschoenus* polyphagous e.g.. *Bolboschoenus*
Celaena leucostigma		x			polyphagous marsh plants
Archanara geminipuncta		x			*Phragmites australis*
Archanara dissoluta		x			*Phragmites australis*
Arenostola phragmitidis		x			*Phragmites australis*
Discestra trifolii				x	polyphagous e.g. *Atriplex*
Lacanobia oleracea		x		x	polyphagous e.g. *Aster*
Lacanobia suasa		x			polyphagous e.g. *Aster*
Mamestra brassicae				x	polyphagous e.g. *Brassica*
Mythimna ferrago				x	polyphagous
Mythimna straminea		x			*Phragmites, Phalaris*
Mythimna impura		x	x	x	Gramineae
Mythimna pallens				x	Gramineae
Mythimna obsoleta		x			*Phragmites australis*
Axylia putris		x			polyphagous low plants
Ochropleura plecta		x	x	x	polyphagous low plants
Diarsia rubi				x	polyphagous
Noctua pronuba		x	x	x	polyphagous low plants
Xestia c-nigrum		x	x	x	polyphagous low plants
Agrotis exclamationis		x			polyphagous low plants
Earias clorana		x		x	*Salix*
Orgyia antiqua				x	polyphagous trees

Leucoma salicis				x	*Populus, Salix*
Spilosoma lubricipedum				x	polyphagous
Spilosoma urticae		x		x	polyphagous marsh plants
Eilema complana	x				lichens, algae
Phragmatobia fuliginosa		x		x	polyphagous low plants
Tyria jacobaeae		x	x		*Senecio jacobaea*