

Butterflies and moths (Lepidoptera: Macrolepidoptera) of Mesta Valley in SW Bulgaria

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Abstract. Data about 483 species of Macrolepidoptera from the Mesta Valley (SW Bulgaria) are presented. Some of the established species – *Cilix asiatica* (O. Bang-Haas, 1907), *Trichiura verena* Witt, 1981, *Tephronia sepiaria* (Hufnagel, 1767) – are rare and locally distributed in Bulgaria. Herein *Cilix asiatica* is reported from Bulgaria for only the third time. Genitalia of *Saturnia pavoniella*, *Noctua janthina* and *N. tertia* are illustrated.

Keywords: Lepidoptera, Macrolepidoptera, Mesta Valley, distribution

Introduction

The Macrolepidoptera are comparatively well studied in Bulgaria, and about 1600 species have been reported (BESHKOV & LANGOUROV, 2004). Although Mesta Valley (Fig. 1) is a distinct zoogeographical region (HUBENOV, 1997) it has not previously been the focus of any special research. Moreover, the region is situated between two high mountains (Pirin and Rhodopes) and is subjected to a Mediterranean climatic influence. However, existing data about the group of Macrolepidoptera in the region of Mesta Valley were extremely poor prior to this study, with only 27 species (21 of which are butterflies) having been reported, mostly after 1964. Only a single species (*Pontia edusa*) had been reported before 1964 (BURESCH & TULESCHKOW, 1929). GOGOV & LOUKOV (1964) reported 3 species and KARISCH (1985) reported one species of moth, as well as 4 butterfly species. The remaining butterfly records were mentioned in ABADJIEV (2001).

Material and methods

The present study was carried out during a period of 27 days and nights from March to November 2003 and from April to October 2004. Data for May and June 2003 and September 2004 are lacking due to bad weather conditions at those times. Most of the material has been gathered from two localities – Gospodintsi Village and in the vicinity of Hadzhidimovo. Some

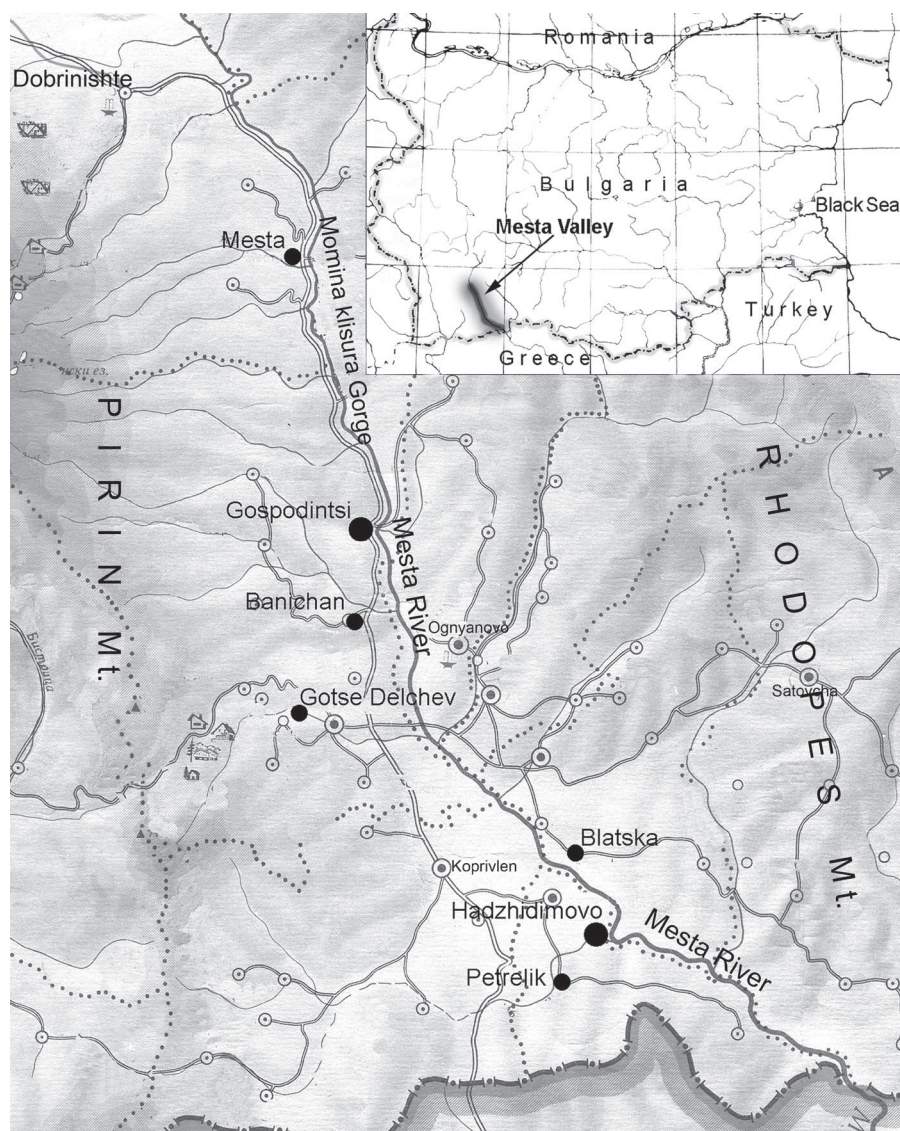


Fig. 1. Map of the region. The two main localities surveyed are marked by large black spots, whilst the smaller spots indicate other localities visited

additional localities mentioned below were also visited. The butterflies and day-active moths were sampled using an entomological net. Most moths were collected by means of two methods – light trapping and sugaring. The first method involved the use of a 160 W HWL (MBTF) lamp and lasted up to 5 hours per night on average. The low budget of our project did not allow the use of a generator, hence the trap was usually situated near settlements in order to access a power supply by means of a 120 metre electric cable. For the sugaring method, a mixture of

red wine and sugar of equal volumes was prepared and used to moisten a 100 meter length of woollen thread. The latter was hung over the shrubby vegetation at a height of one metre.

During the present study about 1400 specimens were collected and many others were observed. The extracted genitalia were embedded in glycerin or saturated saccharose solution and put in plastic containers attached to each specimen. For some specimens, investigation of everted vesica was necessary. The vesicae were prepared following the technique described by FIBIGER (1997). After eversion the vesicae were transferred into glycerol or saturated saccharose solution. All collected specimens are preserved in the collection of Sofia University, Faculty of Biology.

The systematics follows KARSHOLT & RAZOWSKI, 1996, with some modifications.

In the text and in Table 1 localities are marked by numbers.

Localities:

- 1 – Mesta Village, N 41°45,7' E 23°40,3', 650 m
- 2 – Gospodintsi Village, N 41°39,4' E 23°43,6', 600 m
- 3 – Banichan Village, N 41°36,8' E 23°44,2', 560 m
- 4 – Gotse Delchev Town, N 41°34,4' E 23°43,1', 600 m
- 5 – Sveta Bogoroditsa Convent near Gotse Delchev Town, N 41°33,8' E 23°42,4', 700 m
- 6 – Blatska Village, N 41°32,0' E 23°52,6', 580 m
- 7 – Hadzhidimovo Town, N 41°30,6' E 23°51,7', 500 m
- 8 – Hadzhidimovo Town, Sveti Georgi Monastery, N 41°30,6' E 23° 51,0', 560 m
- 9 – Sveti Dimitar Chapel near Hadzhidimovo Town, N 41°30,5' E 23°52,9', 520 m
- 10 – Petrelik Village, N 41°29,0' E 23°52,1', 560 m

Results and discussion

Species determined during the research are presented in Table 1.

Notes to Table 1.

1. Reported from Dobrinishte (ABADJIEV, 2001).
2. Reported from Dobrinishte (KARISCH, 1985).
3. Reported from Gospodintsi Village (ABADJIEV, 2001).
4. Reported from a cave near Gospodintsi Village (BESHKOV, 1995).
5. Reported from Gotse Delchev Town (ABADJIEV, 2001).
6. Reported from Gotse Delchev Town (BURESH & TULESHKOV, 1929).
7. Reported from Gotse Delchev Town (GOGOVI & LOUKOV, 1964).
8. Reported from Koprivlen Village (ABADJIEV, 2001).
9. The specimen was found dead.
10. Imago was not found. Many larvae were observed on *Euphorbia* sp. and two of them were preserved in alcohol.
11. Observed caterpillar nests on *Pinus nigra* Arn. (marked by "L").
12. Det. S. Beshkov.

Conservation status:

13. IUCN: LR

- 14. IUCN: EN
- 15. CORINE
- 16. ESC Red List
- 17. Bern Convention
- 18. Habitats Directive 92/43
- 19. Bulgarian Biodiversity Law

20. *Trichiura verенаe* Witt, 1981

Material: (2), 29.09.2003, 1 ♂ at a lamp.

Reported from a few localities in Bulgaria. Rare species.

21. *Saturnia pavoniella* Scopoli, 1763

Material: (4), 29.03.2003, 1 ♂ in the daytime; (9), 28.04.2003, 1 ♂ in the daytime and 1 ♀ at a lamp; (9), 17.04.2004, 1 ♀ at a lamp.

For the Bulgarian fauna *S. pavonia* as well as *S. ligurica* Weismann, 1876 have been recorded but the latter is a junior synonym of *S. pavoniella* (HUEMER & NÄSSIG, 2003). These species can be differentiated with certainty by examination of the genitalia. In the investigated area only specimens of *S. pavoniella* were found (Fig. 2). Probably *S. pavoniella* is widely distributed in Bulgaria (all Bulgarian specimens I have seen belong to *S. pavoniella* – unpublished data), and *S. pavonia* does not occur in our country. This problem needs a special investigation.

22. Mesta Valley is the third locality of this species in Bulgaria. Until now it was known from Svishtov (ZOLOTUHIN, 1999) and E Rhodopes Mt. (BESHKOV & LANGOUROV, 2004). Probably it is not so rare, but *C. asiatica* is similar to *C. glaucata* and misidentification is a possible reason for absence of more data.

23. Rare species for the Bulgarian fauna, distributed along the Black Sea coast (Varna, Nesebar, Arkoutino), in Strandzha Mt., SW Bulgaria (Zemen Gorge, Pirin Mt., Kozhuh Hill, Belasitsa Mt.) (NESTOROVA, 1998).

24. *Protorhoe corollaria* (Herrich-Schäffer, 1848)

Material: (9), 16.05.2004, 1 ♂ at a lamp.

Protorhoe corollaria is reported from very few localities in Bulgaria. This fact could be partially explained by the possibility of confusion with the similar *P. unicata* (BESHKOV & LANGOUROV, 2004), which is more common. Both species are very similar and for their correct identification genitalia examination is necessary.

25. *Abrostola agnorista* Dufay, 1956

Material: (2), 06.06.2004, 1 ♂ at a lamp (det. S. Beshkov).

The species inhabits the warmest regions of the country – Strouma Valley, S Pirin Mt., Rhodopes Mts., Black Sea coast (BESHKOV, 2000).

26. Known from a few localities in S Bulgaria, Iskar Gorge and Reselets Vill. (BESHKOV, 2000). Relatively rare.

Table 1
List of species

Species	Localities by months												Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
Hepialidae													
<i>Friodia sylvina</i> (Linnaeus, 1761)							2,9						
Psychidae													
<i>Eochorica balcanica</i> (Rebel, 1919)						2							
<i>Rebelia perlucidella</i> (Bruand, 1853)		8		2									12
Limacodidae													
<i>Apodia limacodes</i> (Hufnagel, 1766)				2,9	9								
Zygaenidae													
<i>Rhagades subvolana</i> (Staudinger, 1862)				9									
<i>Zygaena punctum</i> Ochseneimer, 1808				9	2								
<i>Zygaena purpuralis</i> (Brünnich, 1763)				2									
<i>Zygaena carniolica</i> (Scopoli, 1763)							2						
<i>Zygaena ephialtes</i> (Linnaeus, 1767)					7								
<i>Zygaena filipendulae</i> (Linnaeus, 1758)				2,9	7								
Sesiidae													
<i>Chamaesphex leucopisiformis</i> (Esper, 1800)										9			
Cossidae													
<i>Cossus cossus</i> (Linnaeus, 1758)				2	2								
<i>Dyspessa ulula</i> (Borkhausen, 1790)			9	2									
<i>Zenzera pyrina</i> (Linnaeus, 1761)							2						
Lasiocampidae													
<i>Trichura crataegi</i> (Linnaeus, 1758)								9		9			

Table 1
Continued

Species	Localities by months												Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
<i>Trichinura verena</i> Witt, 1981							2						20
<i>Eriogaster lanestrus</i> (Linnaeus, 1758)	2												
<i>Eriogaster rimicola</i> (Denis & Schiffermüller, 1775)				2,9								2	
<i>Malacosoma neustria</i> (Linnaeus, 1758)									2,9				
<i>Lasiocampa trifoli</i> (Denis & Schiffermüller, 1775)													
<i>Macrotylacia rubi</i> (Linnaeus, 1758)		6,8	10										
<i>Dendrolimus pini</i> (Linnaeus, 1758)							2						
<i>Phyllodesma tremulifolia</i> (Hübner, [1810])			9	2,9		2							
<i>Gastropacha quercifolia</i> (Linnaeus, 1758)					9	9							
<i>Odonestis pruni</i> (Linnaeus, 1758)					9	2							
Saturniidae													
<i>Saturnia pyri</i> (Denis & Schiffermüller, 1775)			10										14, 16
<i>Saturnia pavoniella</i> Scopoli, 1763	4	9											21
<i>Saturnia spini</i> (Denis & Schiffermüller, 1775)		8											
<i>Perisomena caecigena</i> (Kupido, 1825)							2	2,9					18, 19
Lemoniidae													
<i>Lemonia balcanica</i> (Herrich-Schäffer, 1847)								9				9	
Sphingidae													
<i>Marumba quercus</i> (Denis & Schiffermüller, 1775)			9,10	2	2								
<i>Mimis tiliae</i> (Linnaeus, 1758)				9	2	9							
<i>Smerinthus ocellata</i> (Linnaeus, 1758)		6			2	9							

Table 1
Continued

Species	Localities by months											Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
<i>Polygona c-album</i> (Linnaeus, 1758)	4			2,9		9						
<i>Araschnia levana</i> (Linnaeus, 1758)				9		9						
<i>Nymphalis polychloros</i> (Linnaeus, 1758)	2			9								9
<i>Melitaea phoebe</i> (Denis & Schiffermüller, 1775)				9								
<i>Melitaea trinia</i> (Denis & Schiffermüller, 1775)				2,9	9	9						15
<i>Melitaea dichyna</i> (Esper, [1778])				9								
<i>Limnitis reducta</i> Staudinger, 1901				2		2						
<i>Apatura metis</i> Freyer, 1829				2,9								15-18
<i>Pararge aegeria</i> (Linnaeus, 1758)		9			2,9	2,9						2,9
<i>Lasioommata megera</i> (Linnaeus, 1767)		6			2,9		2					9
<i>Lasioommata maera</i> (Linnaeus, 1758)				2		2						1
<i>Coenonympha arcania</i> (Linnaeus, 1761)				9								
<i>Coenonympha pamphilus</i> (Linnaeus, 1758)		6,9	10	2,9	9	2,9	9	9				9
<i>Pyronia tithonus</i> (Linnaeus, 1767)					9	2						
<i>Aphantopus hyperantus</i> (Linnaeus, 1758)												1
<i>Maniola jurtina</i> (Linnaeus, 1758)				2,9	2,9	9	9					
<i>Hyponpheke lycan</i> (Rottemburg, 1775)												1
<i>Melanargia galathea</i> (Linnaeus, 1758)				9		1						1,5
<i>Hipparchia syriaca</i> (Staudinger, 1871)					9	2	9	2				
<i>Hipparchia semele</i> (Linnaeus, 1758)												1
<i>Hipparchia statilinus</i> (Hufnagel, 1766)						2,9	9					
<i>Hipparchia fatua</i> Freyer, [1844]						2	2	2				2

Table 1
Continued

Species	Localities by months											Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
<i>Arethusa arethusa</i> (Denis & Schiffmüller, 1775)					2	2,9						1
<i>Brintesia circe</i> (Fabricius, 1775)						9						
Drepanidae												
<i>Thyatira batis</i> (Linnaeus, 1758)			9,10	9	2,9							
<i>Habrosyne pyritoides</i> (Hufnagel, 1766)		6	9,10	2,9	2,9	1,2,9		9				
<i>Tethea ocellaris</i> (Linnaeus, 1767)				2						9	2,9	
<i>Cymatophorima diluta</i> ([Denis & Schiffmüller], 1775)												
<i>Polyplocia ridens</i> (Fabricius, 1787)		2	2									
<i>Asphaltea ruficollis</i> ([Denis & Schiffmüller], 1775)		2,5	9									
<i>Watsonalla binaria</i> (Hufnagel, 1767)						2,9						
<i>Clix glaucata</i> (Scopoli, 1763)			8	9		2						
<i>Clix asiatica</i> (O. Bang-Haas, 1907)							9					22
Geometridae												
<i>Archicaris nolba</i> (Hübner, 1803)			2									
<i>Ligia adustata</i> ([Denis & Schiffmüller], 1775)						10						
<i>Heliomata glarearia</i> ([Denis & Schiffmüller], 1775)		6	9	2,9	2	2,9						
<i>Macaria alternata</i> ([Denis & Schiffmüller], 1775)					9							
<i>Macaria artasaria</i> ([Denis & Schiffmüller], 1775)												7
<i>Chiasmia clathrata</i> (Linnaeus, 1758)				2,9		2						
<i>Opisthograpis luteolata</i> (Linnaeus, 1758)			10	2								
<i>Pseudopanthera macularia</i> (Linnaeus, 1758)				2								
<i>Ennomos erosaria</i> ([Denis & Schiffmüller], 1775)				2,9		2		2				

Table 1
Continued

Species	Localities by months											Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
<i>Scelenia lanularia</i> (Hübner, 1788)		6	9	9	9	2,9						
<i>Crocodalis elingaria</i> (Linnaeus, 1758)						1,9	9					
<i>Colotois pennaria</i> (Linnaeus, 1761)												2,9
<i>Apocheima hispidaria</i> ([Denis & Schiffermüller], 1775)							2					
<i>Apocheima pilosaria</i> ([Denis & Schiffermüller], 1775)							2					
<i>Lycia graecarius</i> (Staudinger, 1861)							1					
<i>Biston strataria</i> (Hufnagel, 1767)							1,2,5					
<i>Biston betularia</i> (Linnaeus, 1758)							9					
<i>Agriopsis bajaria</i> ([Denis & Schiffermüller], 1775)												2
<i>Agriopsis aurantiaria</i> (Hübner, 1799)												2
<i>Agriopsis marginaria</i> (Fabricius, 1776)							1,2,5					
<i>Erannis defoliaria</i> (Clerck, 1759)												9
<i>Synopsis sociaria</i> (Hübner, [1799])										2,9		
<i>Peribatodes rhomboidaria</i> ([Denis & Schiffermüller], 1775)								2,9	2	2	2	2,9
<i>Peribatodes umbraria</i> (Hübner, [1809])									2			
<i>Cleora cinctaria</i> ([Denis & Schiffermüller], 1775)									9			
<i>Hypomecis punctinidis</i> (Scopoli, 1763)									9	2,9		
<i>Ematurga atomaria</i> (Linnaeus, 1758)								4	6	9,10	9	
<i>Tephronia septaria</i> (Hufnagel, 1767)											2	23
<i>Bupalus piniaria</i> (Linnaeus, 1758)										2,9		
<i>Cabera pusaria</i> (Linnaeus, 1758)								2				
<i>Cabera exanthemata</i> (Scopoli, 1763)								9		9		

Table 1
Continued

Species	Localities by months											Notes	
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
<i>Xanthorhoe fluctuata</i> (Linnaeus, 1758)			9		9		2						
<i>Epirrhoe tristata</i> (Linnaeus, 1758)						1,2	2						
<i>Epirrhoe alternata</i> (Müller, 1764)		6					2						
<i>Epirrhoe galiata</i> ([Denis & Schiffermüller], 1775)				2									24
<i>Protorhoe unicata</i> (Guenée, 1857)													24
<i>Protorhoe corollaria</i> (Herrich-Schäffer, 1848)			9										
<i>Costaconexa polygrammata</i> (Borkhausen, 1794)		8						9					
<i>Campogramma biincaata</i> (Linnaeus, 1758)					7	7							
<i>Anticlea badiata</i> ([Denis & Schiffermüller], 1775)	2,5												
<i>Anticlea derivata</i> ([Denis & Schiffermüller], 1775)		6											
<i>Cosmorhoe ocellata</i> (Linnaeus, 1758)			9	2		9							
<i>Nebula salicata</i> ([Denis & Schiffermüller], 1775)	2	2,9	9				9	2					
<i>Ecliptopera silaevata</i> ([Denis & Schiffermüller], 1775)						1							
<i>Chlorocysta siterata</i> (Hufnagel, 1767)			2					2					
<i>Thera firmata</i> (Hübner, 1822)								9					
<i>Thera juniperata</i> (Linnaeus, 1758)													9
<i>Colostygia pectinataria</i> (Knoch, 1781)			9,10										
<i>Horisme ritabata</i> ([Denis & Schiffermüller], 1775)				2	2	1,2,9							
<i>Horisme corticata</i> (Treitschke, 1835)		6,9		2		1,2	9						
<i>Horisme tersata</i> ([Denis & Schiffermüller], 1775)						2							
<i>Melanthia procellata</i> ([Denis & Schiffermüller], 1775)										1			
<i>Euphyia biangulata</i> (Haworth, 1809)									2				

Table 1
Continued

Species	Localities by months											Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
<i>Autophila ligaminosa</i> (Eversmann, 1851)				9								4
<i>Catopbia alchymista</i> [Denis & Schiffermüller, 1775]												
<i>Aedia leucomelas</i> (Linnaeus, 1758)											9	
<i>Euclidia glyphica</i> (Linnaeus, 1758)		6,9	10	2,9	2	2	2					
<i>Scoliopteryx libatrix</i> (Linnaeus, 1758)	4											9
<i>Zeleletia antiqualis</i> (Hübner, [1813])			9	2,9	2,9	2	2				9	
<i>Hypena proboscidealis</i> (Linnaeus, 1758)				9	9	9	9					
<i>Hypena rostralis</i> (Linnaeus, 1758)	2						2	2				
<i>Phytometra viridaria</i> (Clerck, 1759)				9			9					
<i>Rivula sericealis</i> (Scopoli, 1763)			10	2,9	9		2					
<i>Enatelia adalatrix</i> (Hübner, [1813])							9					
<i>Diachrysis chrysis</i> (Linnaeus, 1758)			10	2	2	1	2					
<i>Diachrysis stenochrysis</i> (Warren, 1913)			10				2					12
<i>Macdunnoughia confusa</i> (Stephens, 1850)					2	9	9	9				
<i>Autographa gamma</i> (Linnaeus, 1758)				2,9	2	1,2	9					2
<i>Autographa jota</i> (Linnaeus, 1758)							2					
<i>Chrysoideixis chalcites</i> (Esper, [1789])							2					
<i>Abrostola tripartita</i> (Hufnagel, 1766) (= <i>triphasia</i> auct.)				2	2	2	2					
<i>Abrostola triplasia</i> (Linnaeus, 1758) (= <i>trigenina</i> auct.)				2								
<i>Abrostola agnorista</i> Dufay, 1956				2								12, 25
<i>Emmelia trabecalis</i> (Scopoli, 1763)		8	10	2,9			2,9					
<i>Acontia lucida</i> (Hufnagel, 1766)				9	2	2						

Table 1
Continued

Species	Localities by months											Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
<i>Agrochola maculenta</i> (Hübner, [1809])								2	2			2
<i>Agrochola nitida</i> ([Denis & Schiffmüller], 1775)							2,9	2,9				2,9
<i>Agrochola hichola</i> (Linnaeus, 1758)												2,9
<i>Agrochola humilis</i> ([Denis & Schiffmüller], 1775)							9	9				9
<i>Agrochola litura</i> (Linnaeus, 1758)							2	2				2
<i>Agrochola laevis</i> (Hübner, [1803])												9
<i>Eupsilia transversa</i> (Hufnagel, 1766)	1,5											2
<i>Jodia croceago</i> ([Denis & Schiffmüller], 1775)		2										
<i>Conistra racinii</i> (Linnaeus, 1761)							2	2,9	2,9			2,9
<i>Conistra rubiginea</i> ([Denis & Schiffmüller], 1775)	1,5	2,6,8,9					2					
<i>Conistra erythrocephala</i> ([Denis & Schiffmüller], 1775)	1											2
<i>Episema glaucina</i> (Esper, 1789)												9
<i>Episema tersa</i> ([Denis & Schiffmüller], 1775)							2					
<i>Aporophyla latulenta</i> ([Denis & Schiffmüller], 1775)							2	9				9
<i>Lithophane ornitopus</i> (Hufnagel, 1766)	1,2	2,8,9					9	2				2
<i>Sotiochrosta pallia</i> ([Denis & Schiffmüller], 1775)								9				
<i>Meganephria bimaculosa</i> (Linnaeus, 1767)							2,9	9				9
<i>Allophyes oxyacanthae</i> (Linnaeus, 1758)								9	2			
<i>Valeria oleagina</i> ([Denis & Schiffmüller], 1775)	1,2,5											
<i>Griposia negneri</i> Kobes & Fibiger, 2003							9	9				9
<i>Dichonia convergens</i> ([Denis & Schiffmüller], 1775)												2
<i>Dichonia aeruginea</i> (Hübner, [1808])							2	2,9				2,9

Table 1
Continued

Species	Localities by months											Notes		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov					
<i>Dryobotodes eremita</i> (Fabricius, 1775)														
<i>Dryobotodes serradeii</i> Parenzan, 1982							9					2,9	27	
<i>Dryobotodes carbonis</i> (Wagner, 1931)												2		
<i>Dryobotodes tenebrosa</i> (Esper, [1789])							2							
<i>Antitype chi</i> (Linnaeus, 1758)							9					2		
<i>Ammoconia cecimachla</i> ([Denis & Schiffermüller], 1775)							9					2,9		
<i>Ammoconia senex</i> (Geyer, [1828])												2,9		
<i>Polymixis rufocincta</i> (Geyer, [1828])												2	9	18
<i>Apamea monoglypha</i> (Hufnagel, 1766)				2	2		9					2	2	12
<i>Apamea crenata</i> (Hufnagel, 1766)						2								
<i>Apamea sordens</i> (Hufnagel, 1766)									10					
<i>Oligia strigilis</i> (Linnaeus, 1758)									9					
<i>Luperina rubella</i> (Duponchel, 1835)												9		
<i>Gortyna flavago</i> ([Denis & Schiffermüller], 1775)												2		
<i>Hachala trifolii</i> (Hufnagel, 1766)											6,8			
<i>Lacanobia w-latinum</i> (Hufnagel, 1766)									9,10		2,9			
<i>Lacanobia oleracea</i> (Linnaeus, 1758)									6	10	9	9	1,2,9	
<i>Lacanobia swasa</i> ([Denis & Schiffermüller], 1775)											6,8			
<i>Hada plebeja</i> (Linnaeus, 1761)												2		
<i>Hecatera dysodea</i> ([Denis & Schiffermüller], 1775)												9		
<i>Hecatera biolorata</i> (Hufnagel, 1766)											9			
<i>Hadena capsincola</i> ([Denis & Schiffermüller], 1775)											2			12

Table 1
Continued

Species	Localities by months											Notes
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
<i>Hadena compta</i> (Denis & Schiffermüller, 1775)						2						
<i>Hadena confusa</i> (Hufnagel, 1766)			9									
<i>Hadena magnoliä</i> (Boisduval, 1829)			9	2								
<i>Hadena perplexa</i> (Denis & Schiffermüller, 1775)			9									
<i>Hadena silenes</i> (Hübner, [1822])				2								
<i>Sideridis rivularis</i> (Fabricius, 1775)			10	2	2							
<i>Colonsideridis turbida</i> (Esper, [1790])			10									
<i>Mamestra brassicae</i> (Linnaeus, 1758)		6		2				1				
<i>Polia nebulosa</i> (Hufnagel, 1766)				9	2							
<i>Polia sagittigera</i> (Hufnagel, 1766)				2								
<i>Mythimna turca</i> (Linnaeus, 1761)								2				
<i>Mythimna conigera</i> (Denis & Schiffermüller, 1775)					2			9				
<i>Mythimna ferrugo</i> (Fabricius, 1787)			9	2,9				2,9				
<i>Mythimna albipuncta</i> (Denis & Schiffermüller, 1775)		9	9,10	2,9	2,9	2	9	9	9			
<i>Mythimna vitellina</i> (Hübner, [1808])			9	2,9				2,9	9			
<i>Mythimna l-album</i> (Linnaeus, 1767)								2				
<i>Mythimna sicula</i> (Treitschke, 1835)			9	9,10	2,9	9	9	2,9	9			
<i>Orthosia incerta</i> (Hufnagel, 1766)		1,2,5	2									
<i>Orthosia gothica</i> (Linnaeus, 1758)		1,2,5	9									
<i>Orthosia cruda</i> (Denis & Schiffermüller, 1775)		1,2	9									
<i>Orthosia ceras</i> (Fabricius, 1775)		1	6,9									
<i>Tholera decimatis</i> (Poda, 1761)									9		2	

Table 1
Continued

Species	Localities by months											Notes	
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov				
<i>Bena bicolorana</i> (Fuessly, 1775)				9	2								
Arctiidae													
<i>Miltochrista miniata</i> (Forster, 1771)				9	2,9	1,2,9							
<i>Pelosa muscerda</i> (Hufnagel, 1766)					9								
<i>Lithosia quadra</i> (Linnaeus, 1758)				9	2								
<i>Eilema complana</i> (Linnaeus, 1758)					9								
<i>Eilema pseudocomplana</i> (Daniel, 1939)						2							
<i>Eilema caniola</i> (Hübner, [1808])				2	9							2	
<i>Eilema sororcula</i> (Hufnagel, 1766)		8	9,10	2									
<i>Syntomis phoegea</i> (Linnaeus, 1758)				2									
<i>Syntomis kruegeri</i> (Ragusa, 1904)				2									
<i>Dysauxes ancilla</i> (Linnaeus, 1767)						1							
<i>Dysauxes famula</i> (Freyer, 1836)						1,2		9					
<i>Spiris striata</i> (Linnaeus, 1758)				2									
<i>Phragmatobia fuliginosa</i> (Linnaeus, 1758)		8		8,9	2,9	2,9							
<i>Phragmatobia luctifera</i> ([Denis & Schiffermüller], 1775)			9,10										
<i>Spilosoma lutea</i> (Hufnagel, 1766)			10	9		2,9							
<i>Spilosoma lubripeda</i> (Linnaeus, 1758)		8	9,10	2,9		9							
<i>Spilosoma urticae</i> (Esper, 1789)						9							12
<i>Diacrisia sannio</i> (Linnaeus, 1758)						3							
<i>Arctia villica</i> (Linnaeus, 1758)		2	9,10	2,9									
<i>Euplagia quadripunctaria</i> (Poda, 1761)						1,2,9							18

27. *Dryobotodes servadeii* Parenzan, 1982

Material: (9), 28.09.2003, 2 ♂♂ at a lamp.

This species has hitherto been positively identified from three localities in Bulgaria – Zemen and Kresna Gorges and S Pirin Mt. (BESHKOV, 2000). Probably it is not so rare, but it is almost impossible to distinguish it from other species which are more common.

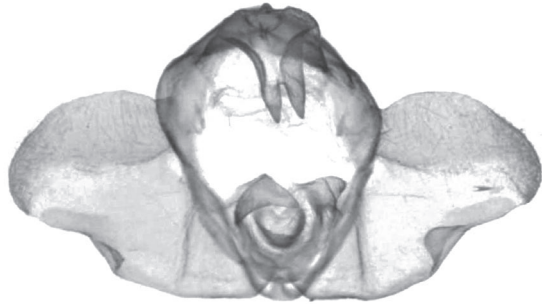


Fig. 2. Male genitalia of *Saturnia pavoniella*, Blatska Village, 28.04.2003

28. *Noctua janthina* ([Denis & Schiffermüller], 1775)

Material: (2), 21.08.2004, 1 ♂ at a lamp (Fig. 3).

Very similar to *N. tertia*. The specimen is in bad condition, so its taxonomic position is doubtful. Also the vesica was perforated and investigation of its structure was impossible. See also Note 29.

29. *Noctua tertia* von Mentzer, Moberg & Fibiger, 1991

Material: (2), 29.09.2003, 1 ♀; 22.07.2004, 1 ♀; (9), 19.06.2004, 1 ♀; 21.07.2004, 1 ♂, all at a lamp.

This species is closely related to *N. janthina*. According to MENTZER et al. (1991) females of both species could be differentiated by some details in the structure of the bursa copulatrix, and the males by the same in the vesica. All of the structural details mentioned in the study of MENTZER et al. (1991) are actually highly dependent on the value of blowing with alcohol, i.e. they significantly vary. The authors MENTZER et al. (1991) also mention differences in the coloration between the two species. Considering the great variability in the coloration of the moths and especially the genus *Noctua*, as well as the unreliable differences in the genitalia of the two species, the correct identification of both *N. tertia* and *N. janthina* sometimes is problematic.

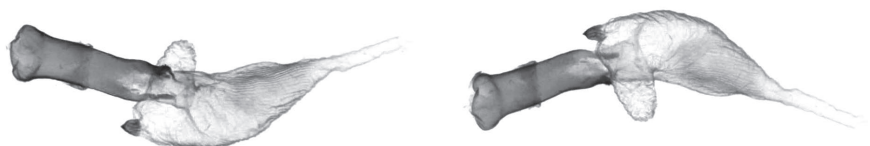
The collected specimens correspond externally to *N. tertia*. However, the genitalia of one female specimen (Figs. 5, 10) are almost identical with the picture of female genitalia of *N. janthina* (in MENTZER et al. 1991, Fig. 17). The collected specimens and their genitalia are illustrated in Figs. 3-12.

Conclusions

As a result of the research conducted in the Mesta Valley, 483 species of Macrolepidoptera were determined. Of them 456 are new for the investigated area. Some species, which are rare and locally distributed in Bulgaria (*Cilix asiatica*, *Apamea syriaca*, *Trichiura verena*, *Tephronia sepiaria*), were collected. Others, *Dryobotodes servadeii* and *Protorhoe corollaria*, are known from only a few localities in the country but they are probably not rare. Their misidentification is a possible reason for the inadequate data (BESHKOV, 2000).



Figs. 3-7. *Noctua* spp. 3. *N. (?) jantbina* ♂, Gospodintsi Village, 21.08.2004. 4-7. *N. (?) tertia*: 4. ♂, Sveti Dimitar Chapel, 21.07.2004. 5. ♀, Gospodintsi Village, 22.07.2004. 6. ♀, Sveti Dimitar Chapel, 19.06.2004. 7. ♀, Gospodintsi Village, 29.09.2003

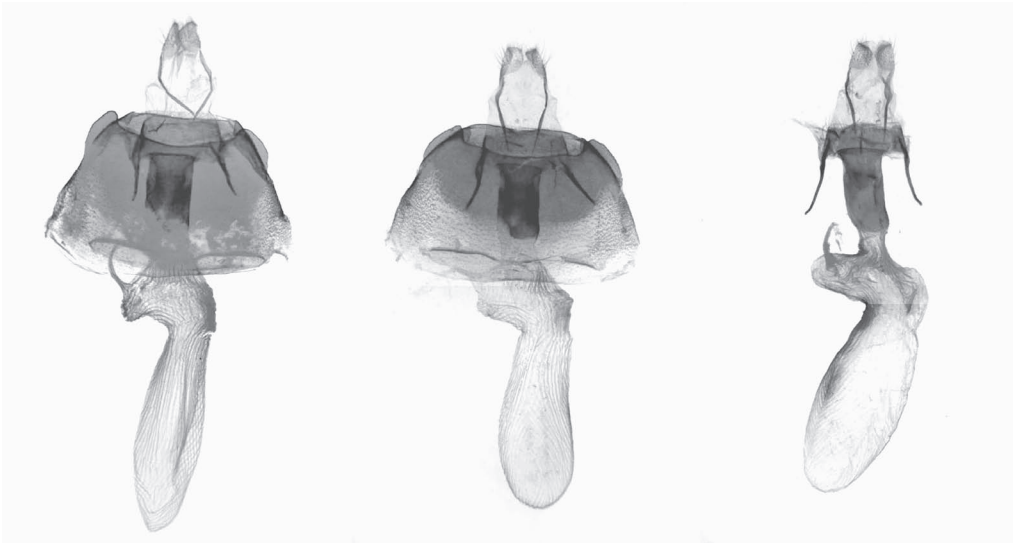


Figs. 8-9. *N. (?) tertia*, everted vesica of specimen Fig. 4. 8. Dorsal view. 9. Ventral view

Fig. 13 presents the species number recorded in each month. June and August were the months when the most species were recorded over the study period. Compared to other similar investigations (BESHKOV, unpublished) this diagram shows some differences. Usually the greatest number of species is recorded in August followed by September and July. The wet weather as well as insufficient data could be possible reasons for this pattern of distribution during the year.

Eleven of the recorded species are included in nature conservation documents.

The lepidopterous fauna of Mesta Valley is comparatively rich and complex. Many submediterranean and pontomediterranean species (*Eochorica balcanica*, *Rhagades subsolana*, *Trichinura verena*, *Pyrgus sidae*, *Anthocharis gruneri*, *Charissa onustaria*, *Cryphia amasina*, *Anthraxia eriopoda*, *Dysauxes famula*, etc.) were found. However, some typical mountainous representatives were recorded in the region (*Hesperia comma*, *Colostygia pectinataria*, *Autographa jota*, *Phlogophora scita*, *Apamea crenata*, *Hada plebeja*, etc.). A number of Submediterranean species (for example *Erynnis marloyi* (Boisduval, 1834), *Tarucus balcanicus* (Freyer, 1844), *Pseudochazara anthelea* (Hübner, 1824), *Pyrrhia victorina* (Sodoffsky, 1849), *Janthinea frivaldskii* (Duponchel, 1835), *Agriopis beshkovi* Ganey, 1987, *Peribatodes correptaria* (Zeller, 1847) occurring in Strouma Valley were not found to exist here. This could be explained by the relatively cold climate and higher altitude of the Mesta



Figs. 10-12. *N. (?) tertia*, female genitalia of specimens figs. 5-7

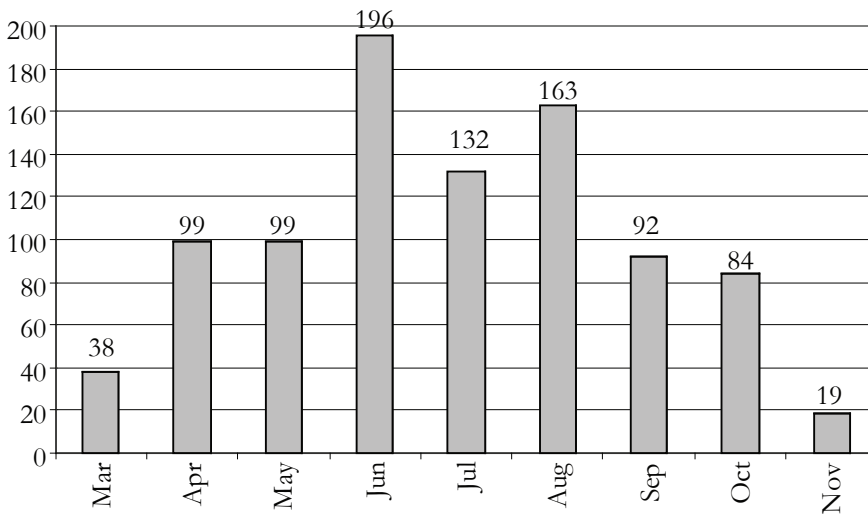


Fig. 13. Distribution of species number in the year during the study period

Valley region. Of course, the fauna of moths and butterflies is still insufficiently studied and the eventual discovery of other rare and faunistically interesting species is possible. An intensive research of Mesta Valley might increase the total number of Macrolepidoptera species to about 520-550 or even more.

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Дневни и нощни пеперуди (Lepidoptera: Macrolepidoptera) на Местенската долина в Югозападна България

Боян ЗЛАТКОВ

(Резюме)

До момента на настоящото проучване данните за пеперудната фауна на Местенската долина бяха изключително оскъдни. Установените за района видове бяха едва 27, повечето от които (21 вида) дневни пеперуди. След провеждане на изследването броят им нарасна на 483, като 456 вида са нови за района. Събирането на материал е извършено по стандартните методи – сбор с ентомологичен сак, чрез светлинна ловилка и чрез хранителни примамки. Изолираните генитални арматури са включени в глицерол или наситен разтвор на захароза, поставени в пластмасов контейнер, и са прикрепени към съответния екземпляр. Дадени са илюстрации на генитални арматури на *Saturnia pavoniella* и *Noctua tertia*. При проучването бяха установени някои редки и интересни във фаунистично отношение видове – *Cilix asiatica*, *Trichiura verenaе*, *Tephronia sepiaria*, *Dryobotodes servadeii* и *Protorhoe corollaria*, като за първия Местенската долина е трето находище в България. Единадесет от видовете са с консервационна значимост.