

MACROLEPIDOPTERA OF ZEMEN GORGE IN SW.-BULGARIA

(Julius GANEV)

Zemen gorge is situated in the south-west part of Bulgaria. River Struma runs through the gorge, dividing it in the Konjavo and Zemen mountains. The total length of the gorge is 15 km and it is 520 m wide. The vegetation is varied. Among the trees Quercus sp. predominate, and Junqlaneta regia, Syringeta vulgaris, Juniperus sp., Cornus mas are present as well. The upper parts are denuded and eroded, only single Juniperus bushes are growing. The lower parts are overgrown with oak and other broad-leaved trees. There are groups of man-planted pines as well. The spaces along the river are occupied by mixed formations of willow and poplar. Some places along the river are occupied with meadow vegetation. There are neither marsh-lands nor marsh vegetation. The single moist place is the one situated around the Zemen waterfall and only there Lycaena dispar rutila Werneburg and Araschnia levana L. are found.

The Lepidoptera fauna of Zemen gorge has not been studied before. My investigation started in 1975, but the gorge was visited more regularly (at least monthly) in 1978-1982. 689 species of Macrolepidoptera were established in the period of the investigation, that is 48 % of the macrolepidopterous fauna of Bulgaria. The species new for the country and some of the rares ones have been reported in preliminary reports (GANEV 1980, 1981, 1982, 1983). The representatives of the families of Zygaenidae, Ctenuchidae and the group Rhopalocera were collected during the day, all over the gorge and the other families in the vicinity of the Skakavitza railway-station, situated in the middle part of the gorge, by means of a light source. Seven new species for the fauna of Bulgaria were established (GANEV 1980, 1981, 1982). These are : Abrostola agnorista Dufay, Nycteola siculana Fuchs, Eupithecia dodoneata Guenée, Dryobotodes carbonis Wagner, Lithophane leautieri Boisduval, Perizoma lugdunaria Herrich-Schäffer and Poecilocampa canensis Millière. A new species for the European fauna was established as well : Trichiura verenae Witt.

The division of the species into groups and families is as follows :

Rhopalocera	98
Sphinges and Bombyces	106
Zygaenidae	5
Sesiidae	1
Geometridae	205
Noctuidae	274
Total	689

The species can be classified into the following zoogeographical groups :

Eurosibirian and European	348	50,5 %
Mediterranean	250	36,3 %
Palaearctic	49	7,2 %
Holarctic	27	3,8 %
Subtropical and Cosmopolitan	13	1,9 %
Balkan endemics	2	0,3 %
Total	689	100,0 %

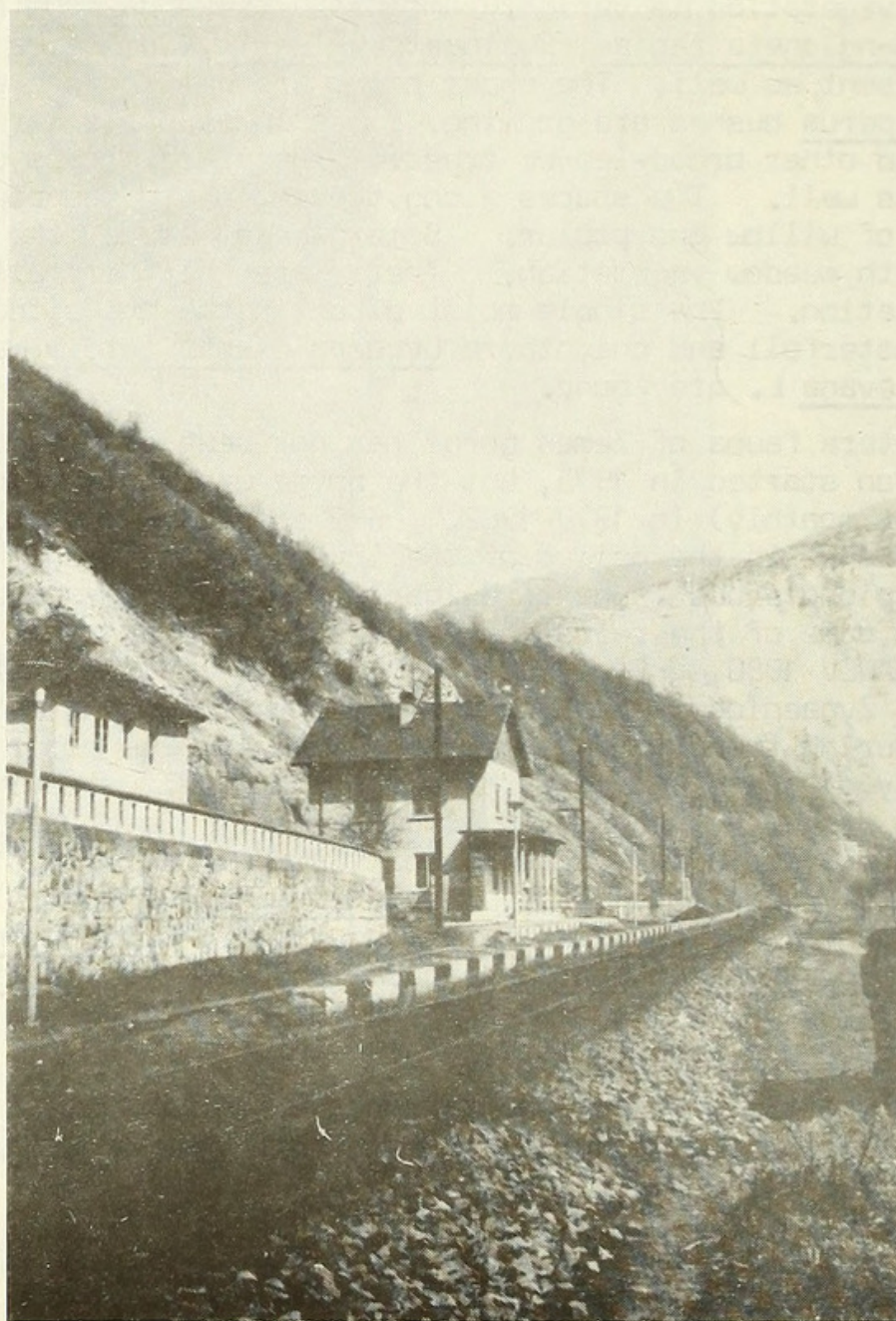


Fig. 1 : Skakavitza railway-station in Zemen gorge. (Foto B. ANEV, Sofia).

Balkan endemics are : Agrochola wolfschlageri Boursin and Pseudoxestia apfelbecki Rebel. The most interesting of the species which have been found only in the valley of the river Struma are: Peridea korbi Rebel, Cryphia ochsi Boursin, Caradrina terrea Freyer and Praestilbia armenica Staudinger. The following species are usually distributed predominately in the mountains between 700-1800 m : Perizoma hydrata Treitschke, Peribatodes secundaria Esper, Gnophos ambiguata Duponchel, Gnophos pullata Denis & Schifferrüller, Euxoa clavis Hufnagel, Chersotis multangula Hübner, Spaelotis senna Geyer, Hadena filigrama Esper and Mythimna comma L. A part of these species has been found on the Black Sea shore as well. Some of the species established in Zemen gorge are known in Bulgaria only from this single locality. The most interesting of these species are : Carcharodus orientalis Reverdin, Araschnia levana L., Thecla betulae L., Strymonidia w-album Knoch, Strymonidia pruni L., Cupido osiris Meigen, Iolana iolas Ochsenheimer, Poecilocampa populi L., Eriogaster rimicola Denis & Schifferrüller, Malacosoma castrensis L., Chlorissa cloraria Hübner, Idaea rubraria Staudinger and Cyclophora pendularia Clerck.

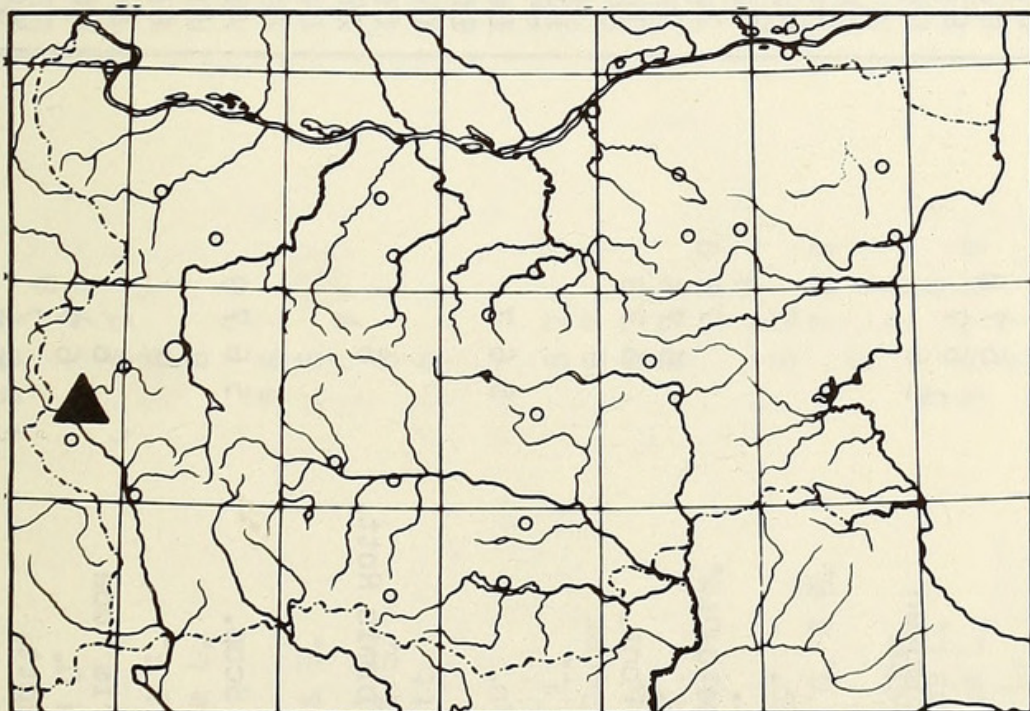


Fig. 2 : Map of Bulgaria showing the position of Zemen gorge.

In the following table all 689 species are recorded showing their flight period (3 = March, 4 = April (...) 0 = October, 1 = November).

HEPIALIDAE

Triodia sylvina L.

9 0

COSSIDAE

Zeuzera pyrina L.

6 7 8

Cossus cossus L.

6 7

Dyspessa ulula Borkhausen

5 6

ZYGAEINIDAE

Jordanita chloros Hb.

7

Zygaena ephialtes L.

7

Zygaena filipendulae L.

7

Zygaena loti D. & S.

6 7

Zygaena purpuralis Pont.

6 7

LIMACODIDAE

Apoda limacodes Hufn.

5 6 7

SESIIDAE

Paranthrene tabaniformis Rott.

6

THYRIDIDAE

Thyris fenestrella Scop.

5 6 7

HESPERIIDAE

Thymelicus sylvestris Poda

6

Thymelicus lineolus O.

6 7

Thymelicus acteon Rott.

7

Hesperia comma L.

6 7

Ochlodes venatus Br. & Grey

6

Erynnis tages L.

4

Carcharodus alceae Esp.

6 7 8

Carcharodus flocciferus Z.

6

Carcharodus orientalis Reverdin

8 9

Spialia sertorius Hffmngg

6 8

Pyrgus malvae L.

5

Pyrgus armoricanus Obth.

9

Pyrgus alveus Hb.

9

Pyrgus serratulae Rbr

6

Pyrgus sidae Esp.

6

PAPILIONIDAE

Parnassius mnemosyne L.

5 6

Zerynthia polyxena D. & S.

5

Zerynthia cerisyi ferdinandi Stich.

5 6 7

Papilio machaon L.

6

Iphiclides podalirius L.

4 7

PIERIDAE

Leptidea sinapis L.

4

Leptidea duponcheli Stgr

7

Colias hyale L.

6 7

Colias alfaccariensis Berger

6 7

Colias crocea Geoffr.

6 7 8 9

Gonepteryx rhamni L.

5 6

Pieris brassicae L.

6 7

Artogeia rapae L.

5 6 7 8

Artogeia napi L.

4 5 6

Pontia daplidice L.

4

Anthocharis cardamines L.

4 5

Euchloe crameri Btlr

6

NYMPHALIDAE

Nymphalis polychloros L.

3 4 6

Nymphalis antiopa L.

4 7

Inachis io L.

4 5 6 7 8

Vanessa atalanta L. 5 6 7 8 9
 Cynthia cardui L. 5 6 7 9
 Aglais urticae L. 4 5 6 7 8
 Polygonia c-album L. 4 5 6 7 8
 Araschnia levana L. 8
 Argynnis paphia L. 7
 Issoria lathonia L. 4 6 7
 Brenthis daphne D. & S. 6
 Clossiana euphrosyne L. 6
 Clossiana dia L. 6 7 8
 Melitaea cinxia L. 5 6
 Melitaea phoebe D. & S. 6
 Melitaea didyma Esp. 7
 Melitaea trivia D. & S. 6
 Mellicta athalia Rott. 6

SATYRIDAE

Melanargia galathea L. 6 7
 Melanargia larissa Geyer 6 7
 Hipparchia fagi Scop. 6 7 8
 Hipparchia semele L. 6 7 8
 Hipparchia statilinus Hufn. 8 9
 Chazara briseis L. 8
 Brintesia circe F. 6 7
 Arethusana arethusa D. & S. 7 8 9
 Maniola jurtina L. 6 8
 Hyponephele lycaon Kühn 7 8
 Aphantopus hyperantus L. 5
 Coenonympha pamphilus L. 5 6 7 8 9
 Coenonympha arcania L. 6 7
 Pararge aegeria L. 4 6
 Lasiommata megera L. 5 8
 Lasiommata maera L. 6 7
 Kirinia roxelana Cramer 6 7

RIODINIDAE

Hamearis lucina L. 5

LYCAENIDAE

Callophrys rubi L. 4 5
 Thecla betulae L. 9
 Quercusia quercus L. 8
 Nordmannia acaciae F. 5 6 7
 Nordmannia ilicis Esp. 6 7
 Strymonidia w-album Knoch 6
 Strymonidia pruni L. 6
 Lycaena dispar rutila Wern. 8 9
 Cupido minimus Fuessly 6 7 8
 Cupido osiris Meig. 6
 Everes alcetas Hffmegg 5 6
 Everes decoloratus Stgr 5 6 7
 Celastrina argiolus L. 4 6 8
 Pseudophilotes baton Bgstr. 6
 Scolitantides orion Pall. 5 6
 Glaucopsyche alexis Poda 4 5 6
 Maculinea alcon D. & S. 6
 Iolana iolas O. 6
 Plebejus pylaon sephirus Friv. 6
 Plebejus argus L. 6 7 9
 Lycaeides argyrognomon Bgstr. 6 7
 Aricia agestis D. & S. 6 7
 Cyaniris semiargus Rott. 6
 Agrodiaetus admetus Esp. 6 7 8
 Agrodiaetus ripartii Frr 7 8
 Plebicula dorylas D. & S. 6
 Lysandra coridon Poda 8 9
 Lysandra bellargus Rott. 6 7 8 9
 Meleageria daphnis D. & S. 6 7 8 9
 Polyommatus icarus Rott. 5 6 7 8 9

LASIOCAMPIDAE

Poecilocampa populi L.	0	1
Poecilocampa canensis Mill.		1
Trichiura crataegi L.	9	
Trichiura verenae witti Ganév		0
Eriogaster lanestris L.	3	
Eriogaster rimicola D. & S.		0
Malacosoma neustria L.	6	7
Malacosoma castrensis L.	7	
Lasiocampa trifolii D. & S.		8
Macrothylacia rubi L.	5	
Dendrolimus pini L.	6	7
Phyllodesma tremulifolia Hb.	4	5
Gastropacha quercifolia L.	7	8
Odonestis pruni L.	6	7

LEMONIIDAE

Lemonia balcanica H.-S.	9	0
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SATURNIIDAE

Saturnia pyri D. & S.	5	
Eudia pavonia L.	3	4
Perisomena caecigena Kupido		9

DREPANIDAE

Drepana binaria Hufn.	6	7
Drepana falcataria L.	5	6
Cilix glaucata Scop.	5	6

THYATIRIDAE

Thyatira batis L.	6	
Habrosyne pyritoides Hufn.	5	6
Tethea ocularis L.	5	6

Cymatophora diluta D. & S.		9
Polyploca ridens F.	3	4
Polyploca ruficollis D. & S.	3	4

GEOMETRIDAE

Denochrominae

Alsophila aescularia D. & S.	3	
Alsophila aceraria . & S.		

Geometrinae

Pseudoterpna pruinata Hufn.	6	7
Geometra papilionaria L.	6	
Comibaena bajularia D. & S.	6	
Hemithea aestivaria Hb.		7
Chlorissa viridata L.	5	6
Chlorissa cloraria Hb.	6	7
Chlorissa pulmentaria Gn.	6	
Thetidia smaragdaria F.	5	7
Thalera fimbrialis Scop.	6	7
Hemistola chrysoprasaria Esp.	6	7
Eucrostes indigenata Vill.		8

Sterrhinae

Idaea rufaria Hb.	7	
Idaea ochrata Scop.	6	7
Idaea aureolaria D. & S.	6	
Idaea vulpinaria H.-S.	7	
Idaea rusticata D. & S.	7	8
Idaea filicata Hb.	6	7
Idaea moniliata D. & S.	6	7
Idaea sylvestraria Hb.		8
Idaea obsoletaria Rbr.		8
Idaea biselata Hufn.	6	7
Idaea dilutaria Hb.	6	
Idaea fuscovenosa Gze	6	7

<i>Epirhoe galiata</i> D. & S.	6	7	8	9
<i>Perizoma alchemillata</i> L.		7		
<i>Perizoma hydrata</i> Tr.			8	
<i>Perizoma lugdunaria</i> H.-S.		6	8	9
<i>Perizoma bifasciata</i> Hw.			8	9
<i>Perizoma albulata</i> D. & S.	5	6		
<i>Hydriomena furcata</i> Thnbg			7	
<i>Anticlea badiata</i> D. & S.	3	4		
<i>Cataclysmе rignata</i> Hb.		5	6	
<i>Hydrelia flammeolaria</i> Hufn.		6		
<i>Asthena albulata</i> Hufn.		5	6	7
<i>Eupithecia haworthiata</i> Dbld.		5	7	
<i>Eupithecia linariata</i> F.		6		
<i>Eupithecia pyreneata</i> Mab.		5	6	7
<i>Eupithecia venosata</i> F.	4			
<i>Eupithecia schiefereri</i> Boh.		6		
<i>Eupithecia centaureata</i> D. & S.		6		8
<i>Eupithecia trisignaria</i> H.-S.		7		
<i>Eupithecia vulgata</i> Hw.		6		
<i>Eupithecia subfuscata</i> Hw.	5	6	7	
<i>Eupithecia semigraphata</i> Bruand		6		
<i>Eupithecia distinctaria</i> H.-S.		6		8
<i>Eupithecia gemellata</i> H.-S.		7		
<i>Eupithecia pimpinellata</i> Hb.			8	0
<i>Eupithecia nanata</i> Hb.				0
<i>Eupithecia innotata</i> Hufn.			8	9
<i>Eupithecia ochridata</i> Pinker	4			
<i>Eupithecia dodoneata</i> Gn.	4	5		
<i>Eupithecia ericeata</i> Rbr.			9	0
<i>Eupithecia adscriptaria</i> Stgr	4	5		
<i>Gymnoscelis rufifasciata</i> Hw.				0
<i>Chloroclystis v-ata</i> Hw.	5		7	
<i>Calliclystis rectangularata</i> L.		5	6	7
<i>Horisme vitalbata</i> D. & S.	4	5	6	7
<i>Horisme corticata</i> Tr.		5	6	8
<i>Horisme tersata</i> D. & S.		5	6	7

Boarmiinae

<i>Lomaspilis marginata</i> L.		5	6	
<i>Ligdia adustata</i> D. & S.		5		
<i>Aleucis distinctata</i> H.-S.	3	4	5	
<i>Stegania dilectaria</i> Hb.			6	8
<i>Cabera pusaria</i> L.		5	6	7
<i>Cabera exanthemata</i> Scop.			6	8
<i>Plagodis dolabraria</i> L.		5		8
<i>Ellopiea prasinaria</i> Hb.			7	
<i>Campaea margaritata</i> L.		5	6	8
<i>Ennomos quercinaria</i> Hufn.			7	8
<i>Deuteronomos fuscantaria</i> Stph.			6	7
<i>Deuteronomos erosaria</i> D. & S.			6	7
<i>Deuteronomos quercaria</i> Hb.				9
<i>Eumera regina</i> Stgr				8
<i>Selenia dentaria</i> F.		5		7
<i>Selenia lunularia</i> Hb.	3	4	5	6
<i>Artiora evonymaria</i> D. & S.				7
<i>Dasycorsa modesta</i> Stgr	3	4	5	
<i>Colotois pennaria</i> L.				0
<i>Crocallis tusciaria</i> Bkh.				9
<i>Crocallis elinguarua</i> L.				9
<i>Ourapteryx sambucaria</i> L.			7	
<i>Opisthograptis luteolata</i> L.		5		9
<i>Epione repandaria</i> Hufn.			6	
<i>Lithina chlorosata</i> Scop.		5	6	
<i>Therapis flavicaria</i> D. & S.		5	6	7
<i>Pseudopanthera macularia</i> L.		5		
<i>Eilicrinia cordiaria</i> Hb.		5	6	8
<i>Eilicrinia trinotata</i> Mentzer		5		8
<i>Macaria notata</i> L.			6	
<i>Macaria alternaria</i> Hb.		5	6	7
<i>Macaria liturata</i> Cl.				7
<i>Chiasmia clathrata</i> L.	4	5	6	7
<i>Chiasmia glarearia</i> Brahm		5	6	7
<i>Proutictis artesiania</i> D. & S.			6	7

Pheosia tremula Cl.	5	6	7	8	9	
Ptilophora plumigera D. & S.						1
Pterostoma palpina Cl.	5	6	7	8	9	
Ptilodontella cucullina D. & S.		7				
Eligmodonta ziczac L.	5	6	7	8		
Clostera curtula L.	4	5	6	8		
Clostera anastomosis L.		5				
Clostera pigra Hufn.				8		
<u>DILOBIDAE</u>						
Diloba caeruleocephala L.						0 1

THAUMETOPOEIDAE

Thaumetopoea pityocampa D. & S.		7				
Thaumetopoea processionea L.				8	9	

LYMANTRIIDAE

Elkneria pudibunda L.	5	6				
Euproctis chrysorrhoea L.		6				
Leucoma salicis L.		6				
Arctornis l-nigrum Müll.		6				
Lymantria monacha L.		6	7			
Lymantria dispar L.				8	9	

ARCTIIDAE

Miltochrista miniata Forster	6	7	8	9		
Atolmis rubicollis L.		6	7			
Eilema sororcula Hufn.		5	6	7		
Eilema caniola Hb.						0
Eilema morosina H.-S.						9
Eilema pygmaeola pallifrons Z.				8	9	
Eilema palliatella Scop.			7			
Eilema complana L.			7	8	9	
Eilema lurideola Zck.			6	7	8	9

Lithosia quadra L.					6	7	8
Arctia villica L.					5	6	7
Ocnogyna parasita Hb.			3	4			
Spilosoma lubricipeda L.					5	6	8 9
Spilosoma luteum Hufn.					5	6	7 8
Diaphora mendica Cl.					5		
Diaphora luctuosa Geyer					5		
Phragmatobia fuliginosa L.					5	6	7 8 9
Phragmatobia placida Friv.					5		
Eucharia casta Esp.					5	6	
Callimorpha quadripunctaria Poda							8 9

CTENUCHIDAE

Syntomis phegea L.					6	7	
Syntomis marjana Stauder					5	6	7
Dysauxes ancilla L.						6	7
Dysauxes famula Frr							8 9

NOLIDAE

Meganola togatalalis Hb.					6	7	
Nola cucullatella L.						7	
Nola confusalis H.-S.					6	7	8 9
Nola cicaltricalis Tr.				4			
Nola chlamytulalis Hb.						6	

NOCTUIDAE

Noctuinae

Euxoa obelisca D. & S.							9
Euxoa tritici L.							8 9
Euxoa distinguenda Led.							9
Euxoa aquilina D. & S.							9
Euxoa cos Hb.							8 9
Agrotis cinerea D. & S.						5	6
Agrotis segetum D. & S.						6	7 8 9

Agrotis clavis Hufn.	6 7		Pachetra sagittigera Hufn.	5 6
Agrotis exclamationis L.	5 6 7 8		Sideridis anapheles Nye	5 6
Agrotis trux Hb.		9 0	Sideridis albicolon Hb.	5 6 7
Agrotis ipsilon Hufn.	5 6 7 8 9 0 1		Heliophobus reticulata Gze	6 7
Agrotis crassa Hb.		8 9	Mamestra brassicae L.	7
Ochropleura renigera Hb.	6 7		Mamestra w-latinum Hufn.	5 6 7
Ochropleura nigrescens Hb.	7		Mamestra suasa D. & S.	6 9
Ochropleura forcipula D. & S.	6		Mamestra oleracea L.	5 6 9
Ochropleura plecta L.	4 5 6 7 8		Mamestra bicolorata Hufn.	5 6
Ochropleura leucogaster Frr	7		Hadena rivularis Fabricius	5 6 7 8
Eugnorisma depuncta L.		8 9	Hadena perplexa D. & S.	5 6
Chersotis multangula Hb.	7 8		Hadena silenes Hb.	5
Chersotis margaritacea Vill.	7 8 9		Hadena luteago D. & S.	5 6
Noctua pronuba L.	5 6 8 9 0		Hadena compta D. & S.	7
Noctua orbona Hufn.		9 0	Hadena confusa Hufn.	5 6
Noctua interposita Hb.	6 7 9		Hadena bicruris Hufn.	5
Noctua comes Hb.	7 8 9 0		Hadena filigrama Esp.	6
Noctua fimbriata Schreber	6 7 8 9		Tholera cespitis D. & S.	9
Noctua janthina D. & S.	7 8 9		Tholera decimalis Poda	9 0
Epilecta linogrisea D. & S.		8 9	Panolis flammea D. & S.	4
Spaelotis senna Geyer	6	9	Egira conspiciellaris L.	4 5
Opigena polygona D. & S.	6 7 8 0		Orthosia cruda D. & S.	3 4
Peridroma saucia Hb.	5	9 0 1	Orthosia miniosa D. & S.	3 4
Diarsia rubi Vieweg	6		Orthosia opima Hb.	3
Xestia c-nigrum L.	5 6 7 8 9 0		Orthosia populeti F.	3
Xestia triangulum Hufn.		7 8	Orthosia stabilis D. & S.	3 4
Xestia baja D. & S.	7 8 9		Orthosia incerta Hufn.	3 4 5
Xestia rhomboidea Esp.		8 9	Orthosia munda D. & S.	3 4
Xestia xanthographa D. & S.		8 9 0	Orthosia gothica L.	3 4 5
Cerastis rubricosa D. & S.	3 4 5		Perigrapha i-cinctum D. & S.	3
Mesogona acetosellae D. & S.		9 0	Mythimna turca L.	9
Mesogona oxalina Hb.		9 0	Mythimna conigera D. & S.	6 7 8
			Mythimna ferrago F.	7 8 9
			Mythimna albipuncta D. & S.	5 6 8 9 0
			Mythimna vitellina Hb.	5 6 8 9 0
			Mythimna unipuncta Hw.	9 0
<u>Hadeninae</u>				
Discestra trifolii Hufn.	5 7 8 9			
Polia nebulosa Hufn.	5 6 7			

Mythimna pallens L.	5	6	7	9	Antitype chi L.	9
Mythimna l-album L.	6	7	8	9	Ammonoia caecimacula D. & S.	0
Mythimna sicula scirpi Dup.	7	8	9		Ammonoia senex Geyer	0
Mythimna comma L.	7				Eupsilia transversa Hufn.	0
<u>Cuculliinae</u>					Jodia croceago D. & S.	1
Cucullia chamomillae D. & S.	5				Conistra vaccinii L.	3
Cucullia umbratica L.	6	7			Conistra ligula Esp.	4
Cucullia scopariae Dorfmeister	9				Conistra rubiginosa Scop.	3
Cucullia celsiae H.-S.	5			9	Conistra veronicae Hb.	3
Cucullia thapsiphaga Tr.	6				Conistra rubiginea D. & S.	3
Cucullia verbasci L.	7				Conistra erythrocephala D. & S.	4
Calophasia lunula Hufn.	5	6	7		Conistra erythrocephala D. & S.	3
Copiphana olivina H.-S.	5	6	7		Agrochola circellaris Hufn.	4
Episema tersa D. & S.	0				Agrochola lota Cl.	0
Episema korsakovi Christoph	0				Agrochola macilenta Hb.	0
Episema scoriacea Esp.	9				Agrochola nitida D. & S.	0
Brachionycha sphinx Hufn.	0	1			Agrochola helvola L.	0
Brachionycha nubeculosa Esp.	3	4			Agrochola humilis D. & S.	0
Aporophyla lutulenta D. & S.	0				Agrochola litura L.	0
Scotochrosta pulla D. & S.	9	0			Agrochola wolfschlageri Boursin	0
Lithophane ornitopus Hufn.	3	4			Agrochola lychnidis D. & S.	0
Lithophane leautieri Bsd.	0				Agrochola laevis Hb.	1
Meganephria bimaculosa L.	0				Parastichtis suspecta Hb.	6
Allophyes oxyacanthae L.	0	1			Atethmia centrargo Hw.	7
Thecophora fovea Tr.	0				Atethmia ambusta D. & S.	0
Valeria oleagina D. & S.	3	4			Xanthia aurago D. & S.	9
Dichonia aprilina L.	9	0	1		Xanthia fulvago Cl.	9
Dichonia convergens D. & S.	0	1			Xanthia togata Esp.	0
Dichonia aeruginea Hb.	0				Xanthia gilvago D. & S.	0
Dryobotodes eremita F.	0	1			Xanthia ocellaris Bkh.	9
Dryobotodes carbonis Wagner	8	9			Xanthia citrargo L.	9
Dryobotodes monochroma Esp.	9	0	1		<u>Acronictinae</u>	
Polymixis polymita L.	9				Colocasia coryli L.	3
Polymixis flavicincta D. & S.	0	1			Moma alpium Osbeck	4
Polymixis rufocincta Geyer	0	1			Acronicta megacephala D. & S.	5
					Acronicta aceris L.	6
						7

Acronicta tridens D. & S.	5	6	7	8	Apamea lithoxyloa D. & S.	6	7
Acronicta psi L.	5	6	7	8	Apamea sordens Hufn.	5	6
Acronicta auricoma D. & S.				8	Apamea scolopacina Esp.	7	
Acronicta euphorbiae D. & S.	5			8	Apamea ophiogramma Esp.	7	
Craniophora ligustri D. & S.	5	6	7	8	Oligia strigilis L.	6	7
Cryphia algae F.			7	8	Oligia latruncula D. & S.	6	7
Cryphia ochsi Boursin				8	Mesoligia furuncula D. & S.		8
Cryphia ereptricula Tr.		6	7	8	Mesapamea secalis L.	6	7
Cryphia rectilinea Warren				8	Luperina rubella Dup.		8
Cryphia raptricula D. & S.			8	9	Gortyna flavago D. & S.		9
Cryphia muralis Forster				8	Archana sparganii Esp.		8
<u>Amphipyridinae</u>					Arenostola phragmitidis Hb.	7	
Amphipyra pyramidea L.			7	8	Charanyca trigrammica Hufn.	5	6
Amphipyra berbera Rungs			7	8	Pseudoxestia apfelbecki Rebel	5	6
Amphipyra tragopoginis Cl.				0	Hoplodrina alsines Brahm	6	7
Amphipyra micans Led.				8	Hoplodrina blanda D. & S.		8
Dypterygia scabriuscula L.	5	6			Hoplodrina respersa D. & S.	6	7
Rusina ferruginea Esp.			7		Hoplodrina ambigua D. & S.	5	6
Polyphaenis subsericeata H.-S.				8	Spodoptera exigua Hb.	5	6
Thalpophila matura Hufn.				8	Caradrina terreia Frr		8
Phlogophora meticulosa L.	4	5	7	8	Caradrina aspersa Rbr	5	7
Callopietria latreillei Dup.				9	Caradrina kadenii Frr		8
Ipimorpha retusa L.				9	Caradrina selini Bsd.	6	7
Ipimorpha subtusa D. & S.				9	Caradrina flavirena Gn.	5	8
Enargia ypsillon D. & S.				9	Caradrina clavipalpis Scop.		8
Dicycla oo L.				9	Praestilbia armeniaca Stgr		9
Cosmia affinis L.				9	Panemeria tenebrata Scop.	7	
Cosmia diffinis L.				9	<u>Heliothinae</u>		
Cosmia confinis H.-S.				9	Heliothis virescens Hufn.	5	6
Cosmia trapezina L.				9	Heliothis maritima Grasl.	6	
Cosmia pyralina D. & S.				9	Heliothis peltigera D. & S.	6	7
Actinotia polyodon Cl.				8	Heliothis armigera Hb.	7	9
Actinotia radiosa Esp.					Protoschinia scutosa D. & S.	7	
Actinotia hyperici D. & S.	4	5		8	Rhodocleptia incarnata Frr	5	6
Apamea monoglypha Hufn.			7		Pyrrhia umbra Hb.	5	6

Species	6	5	7	8	9	0
<u>Periphanes victorina</u> Sodoff						
<u>Axylia putris</u> L.						
<u>Acontiinae</u>						
<u>Melipotis suava</u> Hb.						
<u>Eublemma parva</u> Hb.						
<u>Eublemma purpurina</u> D. & S.						
<u>Eublemma polygramma</u> Dup.						
<u>Calymma communimacula</u> D. & S.						
<u>Emmelia trabealis</u> Scop.						
<u>Acontia lucida</u> Hufn.						
<u>Euteliinae</u>						
<u>Eutelia adulatrix</u> Hb.						
<u>Sarothripinae</u>						
<u>Nycteola revayana</u> Scop.						
<u>Nycteola siculana</u> Fuchs						
<u>Nycteola asiatica</u> Krul.						
<u>Chloephorinae</u>						
<u>Earias chlorana</u> L.						
<u>Earias vernana</u> F.						
<u>Bena prasinana</u> L.						
<u>Pseudoips fagana</u> F.						
<u>Plusiinae</u>						
<u>Abrostola triplasia</u> L.						
<u>Abrostola asclepiadis</u> D. & S.						
<u>Abrostola trigemina</u> Wern.						
<u>Abrostola agnorista</u> Dufay						
<u>Diachrysia chrysitis</u> L.						
<u>Macdunnoughia confusa</u> Stph.						
<u>Autographa gamma</u> L.						
<u>Chrysodeixis chalcites</u> Esp.						
<u>Catocalinae</u>						
<u>Catocala sponsa</u> L.						
<u>Catocala fraxini</u> L.						
<u>Catocala nupta</u> L.						
<u>Catocala elocata</u> Esp.						
<u>Catocala promissa</u> D. & S.						
<u>Catocala electa</u> Esp.						
<u>Catocala lupina</u> H.-S.						
<u>Catocala puerpera</u> Giorna						
<u>Catocala nymphagoga</u> Esp.						
<u>Catocala hymenaea</u> D. & S.						
<u>Minucia lunaris</u> D. & S.						
<u>Dysgonia algira</u> L.						
<u>Callistege mi</u> Cl.						
<u>Euclidia glyphica</u> L.						
<u>Euclidia triquetra</u> D. & S.						
<u>Ophiderinae</u>						
<u>Aleucanitis cailino</u> Lefebvre						
<u>Aedia funesta</u> Esp.						
<u>Tyta luctuosa</u> D. & S.						
<u>Lygephila cracca</u> D. & S.						
<u>Lygephila limosa</u> Tr.						
<u>Scoliopteryx libatrix</u> L.						
<u>Calyptra thalictri</u> Bkh.						
<u>Laspeyria flexula</u> D. & S.						
<u>Parascotia fuliginaria</u> L.						
<u>Epizeuxis calvaria</u> D. & S.						
<u>Phytometra viridaria</u> Cl.						
<u>Rivula sericealis</u> Scop.						
<u>Hypeninae</u>						
<u>Simplicia rectalis</u> Ev.						
<u>Orectis proboscidea</u> H.-S.						
<u>Herminia barbalis</u> Cl.						

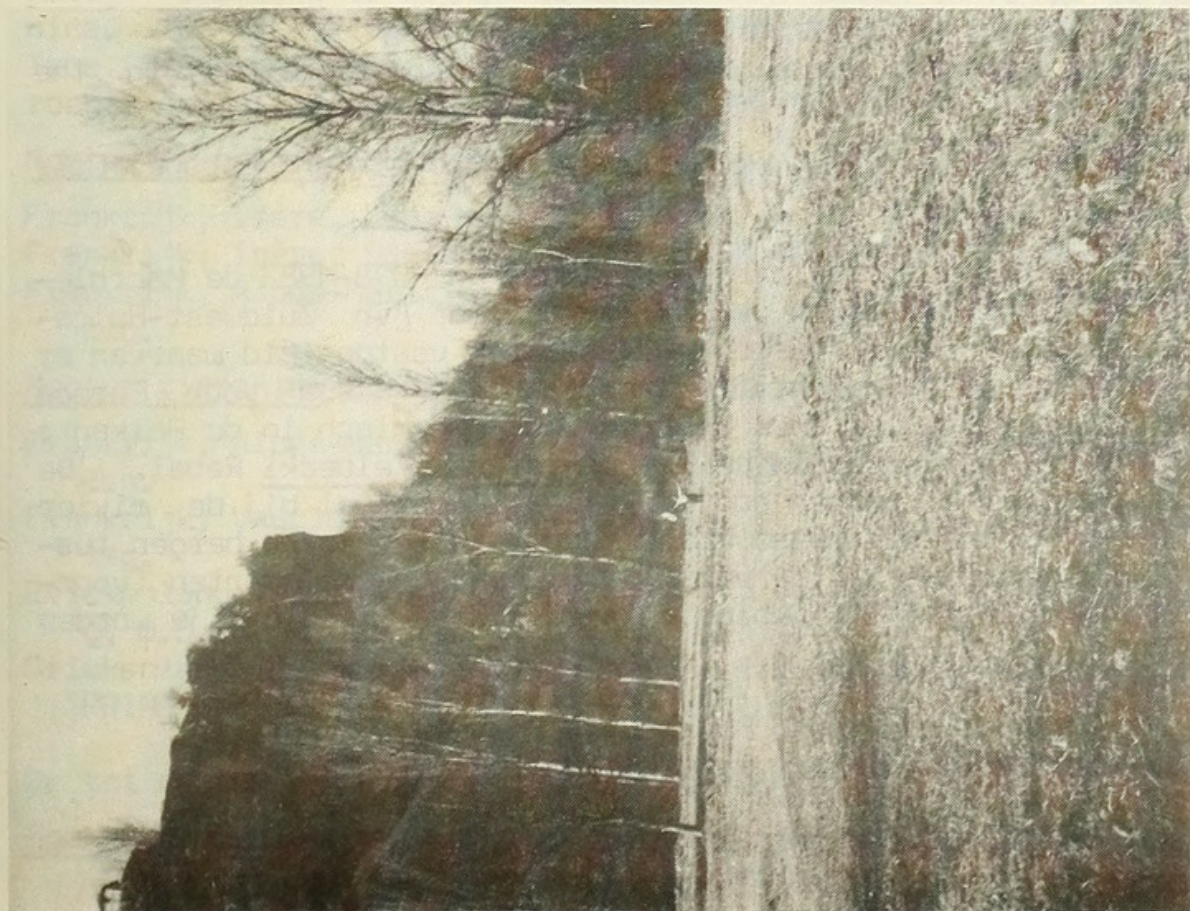


Fig. 3 : Damp meadows around Zemen waterfall.
In this locality Lycaena dispar rutila, Clossiana dia and Araschnia levana are found.

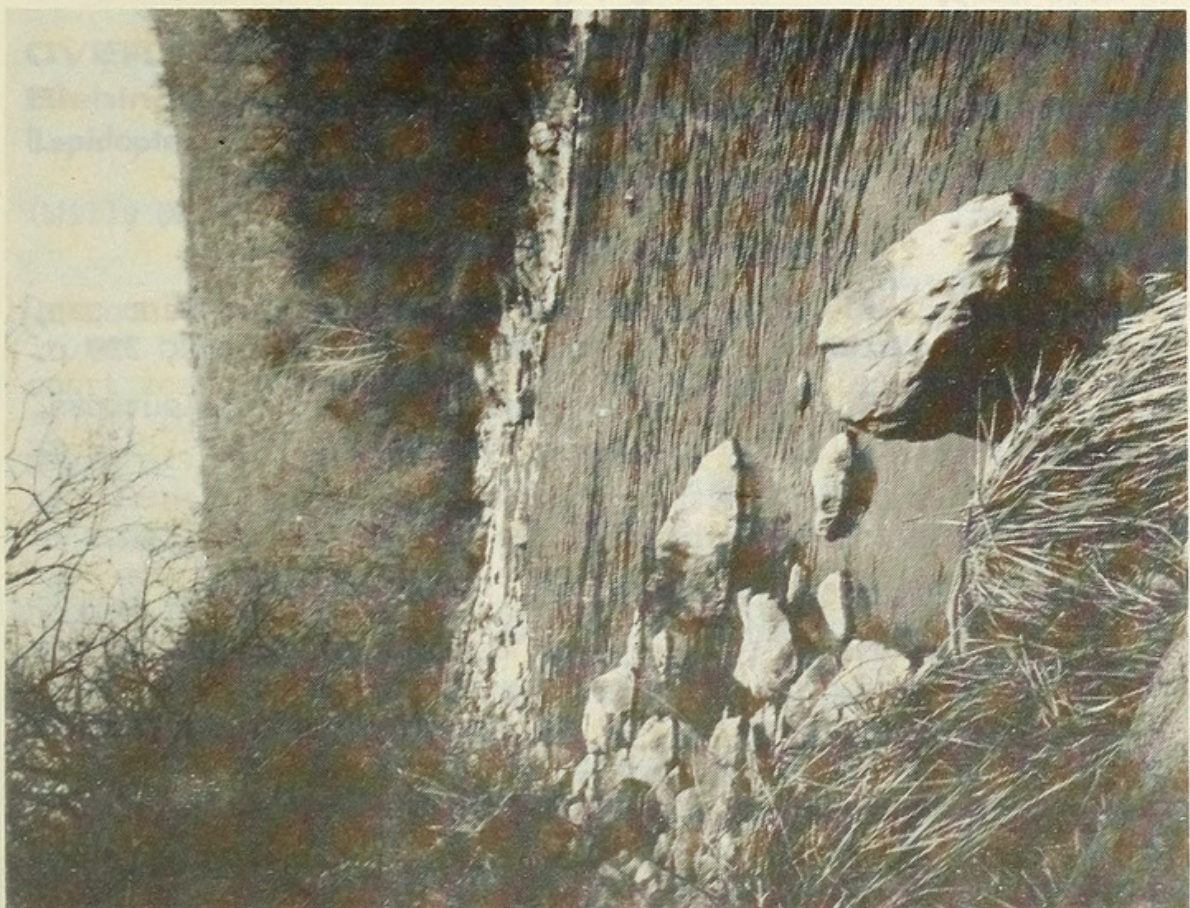


Fig. 4 : Zemen gorge, river Struma.

Herminia tarsipennalis Tr.	6	0
Herminia lunaris Scop.	6 7 8	
Paracolax derivalis Hb.	6 7 8 9	
Hypena rostralis L.	4 7 9 0	
Hypena proboscidalis L.	5 6 9	
Rhynchodontodes antiqualis Hb.	6 7 8 9	

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Samenvatting : De auteur heeft in de periode van 1978-1982 de Macrolepidoptera-fauna van de Zemen kloof in Zuidwest-Bulgarije bestudeerd. In totaal werden 689 soorten vastgesteld waarvan er 7 nieuw waren voor de Bulgaarse fauna en zelfs 1 nieuw voor Europa (Trichiura verenae Witt). Twee soorten zijn endemisch in de Balkan : Agrochola wolfschlageri Boursin en Pseudoxestia apfelbecki Rebel. De auteur geeft aan welke soorten hoofdzakelijk in het dal bij de rivier Struma vliegen, welke het meest worden aangetroffen in de bergen tussen 700 en 1800 m en ten slotte vermeldt hij dat enkele soorten (vooral Rhopalocera) enkel in dit gebied en niet elders in Bulgarije worden aangetroffen.

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Ganev, Julius. 1983. "Macrolepidoptera of Zemen Gorge in S.W. - Bulgaria." *Phegea* 11, 81–96.

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