FOIL, L. D., 1989, Tabanids as vectors of disease agents, Parasitology Today 5: 88 - 96.

KRČMAR, S. & LECLERCQ, M., 1997, Horse flies (Diptera: Tabanidae) on the lower part of the Neretva river in Southern Croatia, Bulletin Annales de la Société royale belge d'Entomologie, 133: 267 - 274.

KRČMAR, S., MIKUSKA, J., DURBEŠIĆ, P., 1997, Sezonska aktivnost obada (Dipt.: Tabanidae) u Hrvatskom primorju. Seasonal activity of horse flies (Diptera: Tabanidae) in the Croatian Littoral. U knjizi: Sažeci znanstv. skupa III. kolokvij - Entomofauna Hrvatske i susjednih zemalja, 1997 (Maceljski, M. et. al., ur.): pp. 33 - 35; Zagreb, 9. i 10. prosinac 1997. Abstr. Scient. Confer. III. Colloq. - Entomofauna of Croatia and adjoining countries, Zagreb, Dec. 9 - 19, 1997.

KRČMAR, S., MAJER, J., MIKUSKA, J. & DURBEŠIĆ, P., 1996, Index of the Tabanidae (Diptera) in Croatia, Supplementum 1, Natura Croatica, 5: 1 - 25.

LECLERCQ, M., ET OLSUFJEV, N. G., 1981, Nouveau catalogue des Tabanidae Palearctiques (Diptera), Notes Fauniques de Gembloux, 6: 3 - 48.

MAJER, J., 1987, Bögölyök - Tabanidae, Fauna Hungarie, XIV kötet, 9 füzet, 57 pp, Akadémiai kiadó, Budapest.

MOUCHA, J., 1959, Zur Kenntnis der Tabanidenfauna Jugoslawiens (Diptera, Tabanidae), Acta Faunistica Entomologica Musei Nationalis Pragae, 5: 17 - 28.

MOUCHA, J., 1965, Zur Kenntnis der Tabaniden - Fauna Jugoslawiens - 2 (Diptera, Tabanidae), Acta Faunistica Entomologica Musei Nationalis Pragae, 11: 71 - 78.

OLSUFJEV, N. G., 1977, Fauna CCCP, Nasekomie dvukrilie, Tabanidae, Tom VII. vip 2, 435 pp, Akademia nauk CCCP, Zoologičeskij institut, Izdatelstvo Nauka, Leningrad.

PARVU, C. & GIRAY, H., 1984, Contribution to the knowledge of some Tabanids (Diptera) of Turkey, Travaux du Muséum d'Histoire naturelle Grigore Antipa, 25: 217 - 225.

PORTILLO, M., 1985, Tabanidae (Diptera de Espana: IV *Hybomitra* Enderlein 1922), Bolletim Sociedade Portuduesa Entomolgia, II Congreso Iberico Entomologia Suppl. 1: 369 - 377.

STROBL, P. G., 1893, Beiträge zur Dipterenfauna des österreichischen Littorale, Wiener Entomologische Zeitung, 12: 29 - 31.

STROBL, P. G., 1898, Fauna diptera Bosne, Hercegovine i Dalmacije, Glasnik Zemaljskog Muzeja Bosne i Hercegovine, 10: 387 - 393.

STROBL, P. G., 1900, Dipterenfauna von Bosnien, Hercegovina und Dalmatien, Wissechaftlichen Mittheilungen aus Bosnien und Herzegovina, 7: 555 - 557.

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55. UDC 595.78:591.9(497.4)(-18)
ISSN 1330-6200

PRELIMINARY RESULTS OF LEPIDOPTERA FAUNA INVESTIGATIONS IN PREKMURJE (NE SLOVENIA)

STANISLAV GOMBOC

Biotechnical Faculty, Agronomy Department, Jamnikarjeva 101, SI-1000 Ljubljana, Slovenia,
e-mail: stanislav.gomboc@bf.uni-lj.si

Received: April 14, 1998 - Accepted: July 22, 1998.

More intensive research of Lepidoptera began after 1970 and especially after 1985, performed mostly by amateurs and S. G., the author of this article. The 6211 data from very different sources and 66 locations were collected and recorded. All together, they make 955 species of Lepidoptera (686 Macro -, 269 Microlepidoptera). The majority of species belongs to the families Noctuidae (258), Geometridae (198), Pyraloidea (97) Tortricidae (67) and 108 butterflies (Rhopalocera). Eight species are new for Slovenian fauna of Macrolepidoptera (mostly Subpannonian elements). The forest fauna prevails, while the meadow fauna is very affected because of intensive use of grass. Some very characteristic and common species disappeared from meadow lands (*Hypodryas maturna* L., *Mellicta britomartis britomartis* Assm., *Colias myrmidone* Esp.), whereas some others are appearing (*Colias erate* Esp., *Apamea sicula syriaca* Osth., *Xestia cohaesa* Herrich-Schäffer). During the investigations, changes in abundance of some species were noticed, as well as a general decline in abundance of all the fauna under investigation, especially on cultivated areas. The geographical, geological and climatic characteristics and vegetation of Prekmurje are described. The taxonomic system of Huemer & Tarman (1993) has been used.

Lepidoptera, faunistic studies, lists, zoogeographical areas, abundance, Prekmurje, Slovenia

GOMBOC, S., Preliminarni rezultati istraživanja faune Lepidoptera u Prekmurju (NE Slovenija). - Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.

Intenzivnija istraživanja Lepidoptera započela su nakon 1970., a napose nakon 1985. Obavljali su ih pretežito amateri, a također i S. G., autor ovoga članka. Prikupljeno je pribilježeno ukupno 6211 podataka iz vrlo različitih izvora i sa 66 lokacija. Sveukupno, to iznosi 955 vrsta Lepidoptera (686 Macro- i 269 Microlepidoptera). Većina vrsta pripada slijedećim porodicama: Noctuidae (258), Geometridae (198), Pyraloidea (97), Tortricidae (67), uz 108 vrsta danjih leptira (Rhopalocera). Osam vrsta pritom je novo za faunu Macrolepidoptera Slovenije (većinom subpanonski elementi). Prevladava šumska fauna, dok je livadna fauna uvelike pogođena intenzivnim korištenjem travnatih površina. Neke su vrlo tipične i raširene vrste nestale s livadnih površina (*Hypodryas maturna* L., *Mellicta britomartis britomartis* Assm., *Colias myrmidone* Esp.), dok se u livadnim staništima pojavljuju i nove (*Colias erate* Esp., *Apamea sicula syriaca* Osth., *Xestia cohaesa* Herrich - Schäffer). Za vrijeme provođenja istraživanja, primjećene su promjene u broju pripadnika nekih vrsta, kao i sveopće smanjenje predstavnika faune koja je istraživana, napose u obrađivanim područjima. U radu se opisuju također i zemljopisne, geološke i klimatske značajke, kao i vegetacija Prekmurja. Korišten je taksonomski sustav Huemera i Tarmana (1993).

Lepidoptera, faunističke studije, popisi, zoogeografska područja, gustoća populacija, Prekomurje, Slovenija.

Introduction

According to the newest data (personal eidence), there are about 3100 species of Lepidoptera registered in Slovenia: about 1700 species of Microlepidoptera and about 1400 species of Macrolepidoptera. Considering the small acreage of Slovenia (20.000 km^2) this is a considerable number of species, and, according to the latest data (KARSHOLT & RAZOWSKI 1996) Slovenia take the 13^{th} place in Europe (just after Hungary). In smaller and rather closed regions of Central Europe, the number of Lepidoptera species can be pretty high (HUEMER 1996; HUEMER & TARMAN 1993; HABELER 1971 - 1983; HAUSMANN 1990; MEINEKE 1995) and it reaches 100 - 850 species per locality and up to 2000 species for larger areas.

Prekmurje is in this sense a rather poorly investigated region, partly because it is so remote, and partly owing to historical reasons. Entomologists hardly ever visited this area and their visits were rather sporadic. The contribution of amateurs was decisive, and even these investigations did not take place until rather recently. Two lepidopterologists were active in this area after World War I: RUDOLF RAKOVEC came from Ljubljana and CIRIL VRANČIČ was a railway employee in Murska Sobota. Their data have been processed by CARNELUTTI (1975), and are also included in this review. After World War II, the investigations of Lepidoptera in Prekmurje were extremely rare. The only important period was the fauna and flora investigation in the district of northern Yugoslav border (1974 - 1975), which included also part of Prekmurje, which belonged to the region (CARNELUTTI 1975). Later on, the insects became popular also among amateurs. Some of them were natives of Prekmurje, and their work was the most important contribution to the knowledge of fauna in this area. Among the first ones was ŠTEFAN GALIČ - a painter from Lendava, who tragically died in the spring of 1997, then BOŽO SEMENIČ coming from Slamnjak near Ljutomer, as well as the author of this review. Nowadays also, quite a few enthusiasts have started this work, but many of them have already given up because of enormous - especially financial problems which accompany such work. ANDREJ ČINČ - s pupil from Gančani - was among the youngest to join the group. After 1975, some lepidopterologists coming from other parts of Slovenia worked in the area. MILAN SUKIČ, originally from Šutna near Kranj, made some important collecting in the area of Goričko, near the place where his parents were born. ŽARKO VREZEC (a painter) and MOJMIR LASAN (ballet - dancer) occasionally visited the area. Some important entomological excursions to Prekmurje also took place, especially by DR. JAN CARNELUTTI (investigations of the Biological Institute of the Slovenian Academy of Science and Art) and PROF. DR. JOŽE MAČEK (Agronomy Department of the Biotechnical Faculty in Ljubljana). The investigations of the later included mostly leaf miners. Guests from abroad did some important collecting as well. Most of them were invited by the author of this review. HEINZ HABELER from Graz - Austria, occasionally also DR. CARLO MORANDINI (director of the Museo di storia naturale Udine - Trbiž in Italy), as well as BRUNO INFANTI, also from Udine.

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

Description of the investigated area

The borders of the district

Prekmurje is in the North-eastern parts of Slovenia, enclosed by three states: Austria on the Northern, Hungary on the Eastern, and Croatia on the Southern side. To the West, this flat part of Slovenia ends in the hilly land of Slovenske gorice (Fig. 1, p. 53).

The district under investigation is furtherly considered as being divided in two parts - according to geographical and ecological characteristics - namely, into a more hilly part and a flat part, named Goričko and Pomurska ravnina (The plain of Pomurje) respectively. This division is based on zoogeographical regionalization of Slovenija (CARNELUTTI 1993), which has been adapted for computer processing by GOMBOC and HABELER. According to it, the area under investigation includes Prekmurje, as well as the flat region on the right bank of the river Mura. The district of Lendavske gorice, which has been treated as a separate entity by CARNELUTTI (1993), has been included into Pomurska ravnina, because it is small, as well as very similar to the surroundings (Fig. 2, p. 53). The entire region includes about 1100 km^2.

Geographical characteristics

Prekmurje is the most north - eastern part of Slovenia (16°02'-16°36' e.g.l. and 46°28'-46°53' n.g.l.). Its position makes it a part of the Centraleuropean faunistic area. According to its geographical characteristics, it is divided in two parts. The Norteastern hilly part is called Goričko. The flat part, opening into the Pannonian plane, is divided in two parts by the river Mura. The part on the left bank is called Ravensko, while the so called Prlekija (which is considered a part of Štajersko by the natives) begins on the right bank. Ravensko and the plane part of Prlekija are phyto- and zoogeographically identical, so that in this study, they are considered one entity (Pomurska ravnina, The plane of Pomurje).

On the whole, the entire district is moderately hilly, the relative hights being within the mezzorelief. The highest point lies in Goričko (Sotinski breg, 418 m a.s.l.), the low-est part being on the Slovene - Croatian border (Muriša), where some stagnant water formations of the river Mura lie only 157 m a.s.l. The entire region faces East, the Pannonian plane. The once characteristic swamps have all been hydroameliorated and are now used for agriculture. The agricultural production is concentrated in the plane, which is mostly turned into fields, with, in the upper parts, cattle breeding and pasture being common, while on suitable localities orchards and vineyards are not rare. Either the least suitable locations are covered with woods (mostly deciduous woods).

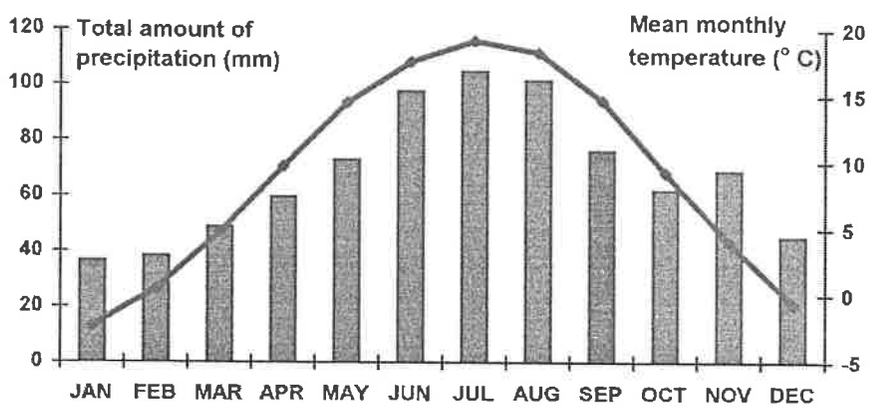
Prekmurje is the most intensive agricultural district in Slovenia: 65% of land is used for agricultural purposes, 27% is covered by forests, and the remaining 8% are not fertile and are mostly urbanized. The are, a which covers only 5% of Slovenia, has about 21.6% of its fields. About 29.6% of Slovenian maize and 29.6% of Slovenian wheat are produced in Prekmurje (Statistični podatki - Statistical data 1992).

Geological characteristics

The region of Prekmurje is a part of Pannonian basin, situated in the river Mura depression. Goričko is older and of volcanic origin. Basal tuffs prevail here. The soils are sandy, clayey, and sometimes loamy. Geolithological basis consists of younger rocks originating from Tertiary and Quaternary. These are mostly sediments of the Pannonian sea, which form also a part of the Pannonian plane. The main constituents of the soil are marl, clay, loam, sand, and gravel (mostly of silicate origin). The remaining part od the Pomurska ravnina lies mostly on the silicate sediments of the Mura river, consisting mainly of gravels and sands. All these rocks belong to the medium acidic group, and the conditions for soil formation are excellent. In the Goričko region, hydromorphic soil prevails, but in the region of Pomurska ravnina - terrestrial soil prevails over the hydromorphic one (STEPANČIČ et al. 1984).

Climatic characteristics

The climate of the Pannonian region is the most continental one in Slovenia. According to Köppen's classification, it belongs to a humid, moderately warm climate with dry winters. Winters are cold and moderately wet (temperatures may drop below -20°C), whereas, on the contrary, summers are very hot and relatively dry.



Graph 3 - Average monthly temperatures and precipitation for the district (M. Sobota, 1961 - 1990; Climate of Slovenia 1996)

The summer temperatures during the hottest months are often above 30 C (20 times or the average). The average temperature during the year for Murska Sobota is 9.2°C, the range for the entire region being 9.2 - 10.3°C. January is the coldest month (average temperatures -2.5° and 0.5 C). July is the hottest one (average 19.4 to 20.1°C). The yearly precipitation average ranges from 730 to 950 mm, being higher in Goričko than in Pomurska ravnina.

Vegetation

Climax of the area under investigation is forest (Fig. 3, p. 55). This has long ago been changed for agricultural purposes, while today its remains are of only marginal importance. This cultivared forest retained the characteristics of an autochthonous forest. Today the following plant communities are to be found in this area:: *Carpinetum subpa-nonicum* Marinček et Zupančič, *Fagetum subpanonicum* M. Wraber, *Luzulo albidae - Carpinetum* M. Wraber, *Querco - Luzulo - Fagetum* Marinček et Zupančič, *Robori - Carpinetum* M. Wraber, *Leucojo - Fraxinetum angustifoliae* Glavač, *Carici brisoides - Alnetum glutinosae* Ht., *Salici - Populetum albae* M. Drees, while *Melampyro vulgati - Quercetum petraeae*, *Galio rotundifolii - Pinetum sylvestris* in *Genisto - Callunetum* are less common. The investigations of the grassy vegetation are rather incomplete. Mainly the following plant communities are found: *Arrhenatheretum medioeuropaeum* Oberd, *Serratulo - Sanguisorbetum officinalis* Seliškar, Bromo - *Cynosuretum cristati* Horvatić, *Deshampsietum caespitosae* Horvatić, *Junco - Molinetum* Preisg., *Caricetum gracilis* Tx. Others, like *Cirsetum rivularis*, *Festuco - Chamaespartietum sagittalis*, *Sanguisorbo - Festucetum pratensis* and so on, are less common. No investigations on weed vegetation in the fields have been reported.

Methods

Data presented in this review are collected from literature, while they originate also from revisions of the existing collections and from collecting on the spot. The latter presents the majority of all the data given here. For collecting during the day, butterfly net was used, while for the night work, UV fluorescent tents and baits were applied. For all the species, reference samples for the collection were collected, prepared, and included into the collection. The well known ordinary species, which could easily be determined on the spot, were only recorded as such, while a representative sample of the others was treated for determinations to be performed later on. Determination was performed according to reference literature and comparative collections. All the data were included into the LEPIDAT relation data base, an application of the Dbase program. The data were made geographically and systematically uniform using a cypher-code. These data were further by statistically treated with the application of LEPIDAT, as well as in the Dbase data system, using our own applications.

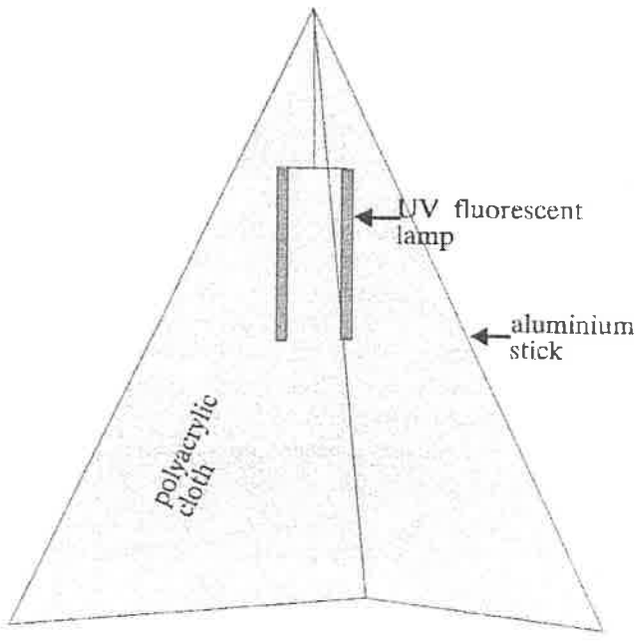


Fig. 5 - Light bait for night collecting with 2 x 18 W UV fluorescent lamps.

Results and discussion

The data were contributed by 11 amateur entomologists (Tab. 1). For 8 of them, their material has been reviewed in collections or in literature, while 3 of them: the author, H. HABELER, and M. LASAN, were systematically collecting on the spot. The majority of the data were supplied by the two natives (author and Š. GALIČ), while others result from sporadic visits of other entomologists.

Data were collected on 66 different localities (Table 2). Pomurska ravnina, with 49 localities, can be considered sufficiently covered, while localities are still considered not numerous enough on the large and very versatile area of Goričko (Fig. 4, p. 55).

Tab. 1. List of entomologists involved, together with the number of data they have supplied

Name	Data	Name	Data
Stanislav Gomboc, Gamčani	3919	Andrej Činč, Gančani	160
Štefan Galič, Lendava	543	Žarko Vrezec	83
S. Gomboc & H. Habeler	502	Jože Maček, Ljubljana	36
Jan Carnelutti, Ljubljana	284	Peter Tonkli, Ljubljana	23
Heinz Habeler, Graz	179	Matjaž Černila, Ljubljana	6
Mojmir Lasan, Ljubljana	170		

Table. 2. Localities (alphabetical order) with geographical characteristics, the number of the data recorded and that of species registered.

A - zoogeographical area Goričko

Locality	Located near	Elevation m a.s.l.	Map in the book "Atlas Slovenije" (1992)	UTM	Nr. of Data	Nr. of Species
1. Bogojina	Bogojina	185	22/A2 Bogojina	XM07	89	54
2. Boreča	Šalovci	370	8/A1 Mačkovci	WM99	5	5
3. Bukov. jezero	Bogojina	190	22/B2 Bogojina	XM07	328	185
4. Bukovnica	Bogojina	200	22/B2 Bogojina	XM07	957	359
5. Dolič Goričko	Kuzma	280	7/B1 Kuzma	WM89	18	18
6. Grad Goričko	Kuzma	271	7/B2 Kuzma	WM88	236	202
7. Hodoš	Šalovci	240	9/B2 Šalovci	XM09	11	10
8. Kobilje	Bogojina	170	23/A2 Kobilje	XM07	2	2
9. Kobilje-Žitkovci	Bogojina	175	23/A2,3 Kobilje	XM07	8	8
10. Kuštanovci	Mačkovci	300	8/B3 Mačkovci	WM98	4	4
11. Kuzma	Kuzma	260	7/B1 Kuzma	WM89	97	96
12. Mačkovci	Mačkovci	270	8/A3 Mačkovci	WM98	35	25
13. Panovci	Mačkovci	300	8/B3 Mačkovci	WM98	10	9
14. Pertoča	Pertoča	225	7/A3 Kuzma	WM88	7	7
15. Stanjevci	Mačkovci	315	8/A1 Mačkovci	WM98	28	22
16. Šalovci	Šalovci	250	9/A2 Šalovci	XM08	4	4
17. Vučja Gomila	Bogojina	268	22/A2 Bogojina	WM97	6	6

The same is true also of the chooice of different localities for the collection: many times in faunistically interesting areas, the localities were often chosen in the vicinity of one another. Most data belong to the locality of Gančani (2460), where the author of this article was born; 506 different taxa have been collected on this spot. Many localities are presented with only some data, which are results of sporadic visits and findings, mostly due to older collections and literature data. The analyses of the data revealed that the best studied group is that of butterflies, as the share of the species determined (110 of 955) relates to very numerous data (1661 of 6211). The situation for the group of Macrolepidoptera (686 species) is not that satisfactory, while that for the group of

Microlepidopera (269 species) is even less favourable, as systematic research has begun only recentely. It is well known that the number of the Microlepidoptera species usually prevails over the number of Macrolepidoptera species. This discrepancy can be attributed to insufficient determination in literature and to a rather difficult determination altogether. Thus collections still contain numerous specimens belonging to this group which could not be determined. On the other hand, amateurs often collect and deal only with big and beautiful butterflies, while they are inclined to ignore the small ones, not to speak of tiresome determination. The group of Microlepidoptera was given some real attention in Slovenia only during the last 4 years, the same being true for this area. Comparison with the Austrian regions just across the border (HUEMER & TARMAN 1993) indicates that about 500 additional species of Microlepidoptera and about 150 species of Macrolepidoptera may be expected for the region under investigation. Together with the already described taxons, this means about 1600 taxons in the area.

B - zoogeographical area Pomurska ravnina

Locality	Located near	Elevation m a.s.l.	Map in the book "Atlas Slovenije" (1992)	UTM	Nr. of Data	Nr. of Species
1. Bakovci	Bakovci	187	46/A1 Ljutomer	WM86	4	4
2. Banovci	Bakovci	182	46/A2 Ljutomer	WM96	9	9
3. Beltinci	Mur. Sobota	178	46/B2 Ljutomer	WM96	12	11
4. Cankova	Radenci	220	20/A1 Radenci	WM87	1	1
5. Cezanjevci	Ljutomer	183	46/A3 Ljutomer	WM95	1	1
6. Cven	Ljutomer	174	46/B2 Ljutomer	WM95	11	11
7. Dobrovnik	Turnišče	174	22/B3 Bogojina	XM07	76	53
8. Dokležovje	Bakovci	184	46/A1 Ljutomer	WM96	90	52
9. Dolnja Bistrica	Črenšovci	170	47/A3 Črenšovci	XM05	145	110
10. Filovci	Bogojina	180	22/A3 Bogojina	XM07	2	2
11. Gančani	Mur. Sobota	179	22/A3 Bogojina	WM96	2460	506
12. Gančani Hraščica	Mur. Sobota	176	22/A3 Bogojina	WM96	176	97
13. Gederovci	Radenci	200	20/A2 Radenci	WM87	79	79
14. Genterovci	Turnišče	165	48/A1 Lendava	XM06	147	112
15. Gornja Bistrica	Črenšovci	172	47/A2 Črenšovci	XM05	1	1
16. Gornja Radgona	Gor. Radgona	210	19/B2 G. Radgona	WM77	26	23
17. Hotiza, Hotiško jezero	Črenšovci	164	47/B2 Črenšovci	XM05	24	23
18. Hotiza, Mura	Črenšovci	164	47/B2 Črenšovci	XM05	2	2
19. Hrastje Mota	Radenci	196	45/B1 Videm ob Ščavnici	WM86	5	5
20. Ivanci	Bogojina	180	22/A3 Bogojina	WM97	8	8
21. Kolišče bobri	Črenšovci	170	47/A3 Črenšovci	XM05	12	12
22. Kot, Mura	Lendava	163	48/A3 Lendava	XM05	2	1
23. Lendava	Lendava	170	48/B2 Lendava	XM16	185	119
24. Lendava, potok	Lendava	169	48/B2 Lendava	XM16	4	4
25. Lendavske gorice	Lendava	280	48/B2 Lendava	XM16	11	8
26. Lipovci	Mur. Sobota	188	21/B3 M. Sobota	WM96	4	3

27. Lipovci, Rail Station	Murska Sobota	188	21/B3 M. Sobota	WM96	44	26
28. Mala Polana	Črenšovci	166	47/B2 Črenšovci	XM06	168	116
29. Mala Polana, Črnilog	Črenšovci	166	47/B Črenšovci	XM06	164	131
30. Martjanci	Murska Sobota	195	21/B2 M. Sobota	WM97	1	1
31. Melinci	Črenšovci	176	46/B2 Ljutomer	WM96	8	8
32. Moravci	Murska Sobota	220	21/B2 M. Sobota	WM97	11	6
33. Muriša	Lendava	159	75/A1 Podturen	XM25	55	38
34. Murska šuma	Lendava	160	75/A1 Podturen	XM25	1	1
35. Murska Sobota	Murska Sobota	190	21/A3 M. Sobota	WM97	102	99
36. Nedelica	Turnišče	170	47/B1 Črenšovci	XM06	78	78
37. Orehovci, G. Radgona	Radenci	230	20/A3 Radenci	WM76	3	3
38. Petišovci	Lendava	159	48/B3 Lendava	XM15	12	10
39. Petišovci ob Muri	Lendava	166	48/B3 Lendava	XM15	4	2
40. Podgrad pri G. Radgoni	Gornja Radgona	217	19/B2 Gornja Radgona	WM77	1	1
41. Radenci	Radenci	207	20/A3 Radenci	WM86	4	3
42. Radmožanci	Turnišče	165	48/A1 Lendava	XM06	78	68
43. Rakičan	Murska Sobota	186	21/B3 M. Sobota	WM96	1	1
44. Renkovci	Turnišče	175	22/A3 Bogojina	XM06	12	12
45. Sodišinci	Radenci	200	20/A2 Radenci	WM87	9	6
46. Strehovci	Bogojina	180	22/B3 Bogojina	XM07	3	2
47. Veščica	Murska Sobota	192	20/B2 Radenci	WM97	30	29
48. Vučja vas	Bakovci	192	45/B1 Videm ob Ščavnici	WM86	7	7
49. Žitkovci	Turnišče	168	23/A3 Kobilje	XM06	73	57

According to the data collected so far, the fauna of Goričko and Pomurska ravnina differ in no less than 49% of species (Tab. 3). This should be enough to prove that the investigations performed on fauna in Pomurje till now are in general far from being numerous enough. The data treatment showed that the data have been collected in habitats which are not comparable and that they have been collected at very different times. Comparison of the vegetation and - further on - of the fauna, allows for an estimation that only max 10% of the species are specific for each area. The diversity of fauna in Goričko is very interesting, since numerous species have been determined, compared to data available. In this geographically rather diverse area, many autochthonous (hardly degraded) phytocenoses have been preserved. On the other hand, Pomurska ravnina is a district where intense agriculture and especially hydroamelioration have decimated autochthonous vegetation.

Tab. 3. Number of data collected for each area.

Number of data collected:		**6211**
Pomurska ravnina	4366	
Goričko	1845	
Number of species determined:		**955**
Pomurska ravnina	837	
Goričko	605	
Number of species found only in:		
Pomurska ravnina 350 - (37% of the fauna determined)		
Goričko 118 - (12 % of the fauna determined)		
Number of species found in both areas: 487 - (51 % of the fauna determined)		

The great majority of the species determined belongs to the Noctuidae family i. e. 258 out of 540 which are altogether registered in Slovenia (CARNELUTTI 1992a). They are followed by the family of Geometridae with 198 species, and others (Tab. 4). This table speaks for itself, stating the small number of the species of the Microlepidoptera group. The most numerous families as Tortricidae, Coleophoridae, Gelechiidae and some others, are still very pooly investigated in Prekmurje. But, on the other hand, the data for the Macrolepidoptera group are consistent with ratios for Slovenian fauna elsewhere (CARNELUTTI 1992a) as well as with the ratios in other countries (KARSHOLT & RAZOWSKI 1996).

Tab. 4. Species as distributed among families.

Family	Species Nr.	%
Noctuidae	258	27.02
Geometridae	198	20.73
Tortricidae	67	7.02
Crambidae	63	6.60
Nymphalidae	35	3.66
Pyralidae	34	3.56
Notodontidae	31	3.25
Arctiidae	29	3.04
Lycaenidae	29	3.04
Pieridae	14	1.47
Satyridae	14	1.47
Hesperiidae	13	1.36
Lasiocampidae	12	1.26
Other families	158	16.54

Owing to the intensive agriculture and agrotechnical changes, the biodiversity of the region has been rapidly declining during the past years. Because of the critical situ-

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

ation on the market, farmers are giving up cattle breeding and smaller fields are being joined together to obtain larger cultivated surfaces, where mainly monocultures are grown. The diversity of agriculture has also considerably declined. Today monocultures of maize, wheat and partly also sugar beet prevail. The use of herbicides also plays a role in biodiversity decline. Additionally, giving up cattle breeding means changing a lot of grass lands into fields on smaller farms and intensifying grass production means more manure and additional mowing on grassland. Great discrepancies are being observed between butterfly life cycles and constant intensive mowing (the same being true also for other insects). The meadow (including also butterfly) fauna is being strongly affected by fewer and fewer grassy areas. Serious losses have already occurred and still others are threatening. Meadows are also disappearing, because they are being left unattended. First, the remainder of dead plants hinders the vegetation, and in two years new woods completely change the habitat. Most butterflies need specific plants to survive. Heavy mechanisation is also a serious drawback, as many insects are killed because of them. The insects are either smashed because of the heavy equipment and/or killed by the rotating parts of it. During the last few years, as I have seen observing the Lepidoptera fauna in Prekmurje more closely, the biodiversity of the fauna has considerably declined and it is also considerably less numerous. Though some of it can be attributed to climatic reasons (the influence of the extremely dry years of 1993 and 1994 being very pronounced), the degradation of the fauna due to the exploitation of the area is obvious. In Prekmurje (as well as in other parts of Slovenia), all those grass species that feed on wildl plants and those where imagos feed on nectar are endangered on meadows which are mown and on the fields, because flowering plants are less and less numerous on these surfaces

Prekmurje used to be a mostly swampy area, since floods were common. These parts have been hydroameliorated, and today they are cultivated. All this has had a devastating influence on the Pannonian hydrophilic species and today they can be found only in small refuges within the cultivated areas. As there are no other possibilities for these species to occupy alternative habitats when the old ones are changed, they are even more endangered.

Besides, species in orchards, vineyards and cultivated woods are also endangered. Monocultures in orchards, vineyards and some woody areas, where pesticides are intensively used, are nearly sterile. The various gardens around the houses, which used to be so common in this area, have nearly disappeared. Beside the pronounced natural biodiversity, many imagos could also feed on the ripening fruit. Woods are the only ecosystem which has not changed very much. In spite of their being intensively used, some of their original autochthonous character has remained. Collecting in woods still gives very diverse, as well as numerous samples.

Some spring species can also be considered endangered. For some years now, some very late periods of winter weather have occured during nearly every season (they appear as late as May). Because of very quick changes of weather during this time of the year, the mortality among the spring species is higher than usual. Females often die before they lay eggs, caterpillars and other developmental stages are also badly hit. As

these cold seasons have seen repeatedly occurring for some years now, these species cannot recover and are slowly disappearing. A good example here is *Saturnia pyri* D & S., which is close to becoming extinct.

In spite of all these drawbacks, some species have been found in the area which have not been known in the Slovenian fauna. Here, only Macrolepidoptera are given, since the is no comparative list for Slovenian Microlepidoptera (though there are quite a few new species also among the latter). This is the first registration for the following species in Slovenia: *Colias erate* Ribbe (Pieridae); *Scopula corrivalaria* L., *Scopula flaccidaria* Goeze, *Eulithis mellinata* L., *Stegania dilectaria* L., (Geometridae); *Apamea sicula syriaca* D. & S., *Xestia cohaesa* L., *Phragmatiphila nexa* D. & Sch. (Noctuidae).

In spite of serious changes in the fauna structure owing to the changes in their habitats, quite a few ecologically very specific species have been found in the district. They survived on the borders of cultivated surfaces, but today they are very few in number and very endangered. Among the most numerous are the polyphagous species, which are very well adapted to agricultural districts, and are characteristic of such areas: (*Autographa gamma* Hb., *Agrotis exclamationis* D. & S., *Xestia c-nigrum* Hufn., *Pieris* species and many others).

Table 5 gives the check list of all the species which have so far been found in this area (pp. 41 - 50).

Acknowledgement

Thanks are due to HEINZ HABELER, B. Sc., MOJMIR LASAN and DR. JAN CARNELUTTI, for their advice and assistance in determinations. My thanks also to all the authors who gave me the permis-sion to use their data, I thank them also on their encouragement and technical advice while performing faunistic analyses.

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

Tab. 5. Checklist of species according to the two districts:
A - Pomurska ravnina; B - Goričko (Used is the system of HUEMER & TARMAN 1993)

SPECIES	A	B
Hepialidae		
Triodia sylvina L.	●	●
Phymatopus hectus L.		●
Nepticulidae		
Stigmella freyella Hey.	●	
' *prunetorum* Stainton	●	
' *aceris* Frey	●	
' *centifoliella* Z.	●	
' *ulmivora* Fologne	●	
' *trimaculella* Haw.	●	
Ectoedemia caradjai Groschke	●	
Heliozelidae		
Antispila metallella D. & S.	●	
Adelidae		
Nematopogon swammerdamella L.	●	●
Nemophora auricella Rag.	●	
' *degeerella* L.	●	
Adela reaumurella L.	●	●
Cauchas violella Tr.	●	
' *rufimitrella* Scop.	●	
Incurvariidae		
Incurvaria oehlmanniella Hb.		●
' *masculella* D. & S.	●	
Tischerriidae		
Tischeria heinemanni Wck.	●	
' *angusticollella* Dup.	●	
Psychidae		
Dahlica triquetrella Hb.	●	
Taleporia tubulosa Retzius	●	
Proutia betulina Z.	●	
Psyche casta Pallas	●	●
' *crassiorella* Bruand	●	●
Bijugis bombycella D. & S.	●	
Rebelia surientella Bruand	●	
Epichnopterix plumella D. & S.		●
' *kovacsi* Sieder	●	●
Acanthopsyche atra L.	●	●
Canephora hirsuta Poda	●	●
Megalophanes viciella D. & S.	●	
Apterona helicoidella Vallot	●	●
Tineidae		
Euplocamus anthracinalis Scop.	●	
Scardia tessulatella L. & Z.	●	
Nemapogon granella L.	●	
Triaxomera parasitella Hb.	●	
' *fulvimitrella* Sod.	●	
Neurothaumasia ankerella Mn.	●	
Monopis monachella Hb.	●	●

SPECIES	A	B
Tineola bisselliella Hummel	●	
Tinea semifulvella Haw.	●	
' *trinotella* Thnbg.	●	●
Bucculatricidae		
Bucculatrix thoracella Thnbg.	●	
Gracillariidae		
Caloptilia syringella F.	●	
' *stigmatella* F.	●	●
Parornix anguliferella Z.	●	
' *scoticella* Stainton	●	
' *finitimella* Z.	●	
Callisto denticulella Thnbg.	●	
Phyllonorycter platani Stdgr.	●	
' *cydoniella* D. & S.	●	
' *geniculella* Ragonot	●	
Cameraria ohridella Desch. & Dimiæ	●	
Yponomeutiidae		
Scythropia crataegella L.	●	
Yponomeuta evonymella L.	●	●
' *plumbella* D. & S.	●	
Prays fraxinella Bjerk.	●	
Argyresthia pruniella Cl.		●
Ypsolophidae		
Ypsolopha mucronella Scop.	●	
' *scabrella* L.	●	●
' *sequella* Cl.	●	
Plutelidae		
Plutella xylostella L.	●	●
Bedelliidae		
Bedellia somnulentella Z.	●	
Lyonetiidae		
Lyonetia clerkella L.	●	
Coleophoridae		
Coleophora ornatipenella Hb.		
Coleophora inulifolia Benander	●	
Elachistidae		
Elachista argentella Cl.	●	
Agonopterix kaekeritziana L.	●	
Telechrysis tripuncta Haw.	●	
Chimabachidae		
Diurnea fagella D. & S.	●	●
Carcinidae		
Carcina quercana F.	●	●
Oecophoridae		
Tichonia tinctella Hb.	●	
Batia lambdella Don.	●	●
' *internella* Jäckh	●	●
Metalampra cinnamomea Z.		●
Bisigna procerella D. & S.		●

SPECIES	A	B
Harpella forficella Scop.	●	●
Lecithoceridae		
Homaloxestis briantella Tur.		●
Scythrididae		
Scythris muelleri Mn.		●
Blastobasidae		
Blastobasis huemeri Sinev	●	
Gelechiidae		
Chrysoesthia sexguttella Thnbg.	●	
Pseudotelphusa scalella Scop.	●	
Acompsia cinerella Cl.	●	
' *tripunctella* D. & S.	●	
Dichomeris ustalella F.	●	
Cossidae		
Cossus cossus L.	●	
Lamellocolus terebrum D. & S.	●	
Phragmataecia castanea Hb.	●	
Zeuzera pyrina L.	●	
Sesiidae		
Sesia apiformis Cl.	●	●
Paranthrene tabaniformis Rottemb.	●	●
Synanthedon vespiformis L.	●	
' *myopaeformis* Bkh.	●	
Bembecia ichneumoniformis D. & S.	●	
Chamaesphecia empiformis Esp.	●	
Zygaenidae		
Zygaena carniolica Scop.	●	●
' *loti* D. & S.	●	●
' *transalpina* Esp.	●	
' *filipendulae* L.	●	
' *lonicerae* Scheven	●	
' *purpuralis* Brünn.	●	
Adscita subsolana Stgr.		●
' *globulariae* Hb.	●	
' *statices* L.	●	
Limacodidae		
Apoda limacodes Hufn.	●	●
Heterogenea asella D. & S.		●
Choreutidae		
Choreutis pariana Cl.	●	
Tortricidae		
Phtheochroa inopiana Haw.	●	●
Phalonidia manniana F.v.R.	●	
' *alismana* Rag.	●	
Agapeta hamana L.	●	
' *zoegana* L.	●	●
Eupoecilia ambiguella Hb.	●	
Cochylidia heydeniana H.S.		●
Cochylis posterana Z.	●	
Tortrix viridana L.	●	●

SPECIES	A	B
Aleimma loeflingianum L.	●	
Tortricodes alternella D. & S.	●	
Epagoge grotiana F.	●	
Archips podana Scop.	●	●
' *crataegana* Hb.	●	
Choristoneura hebenstreitella Müll.		●
Pandemis corylana F.	●	●
' *cerasana* Hb.	●	
' *heparana* D. & S.	●	●
' *dumetana* Tr.	●	●
Clepsis rurinana L.	●	
' *spectrana* Tr.	●	
Adoxophyes orana F.v.R.	●	
Bactra lancealana Hb.	●	
Endothenia oblongana Haw.	●	
' *quadrimaculana* Haw.	●	
Eudemis porphyrana Hb.	●	
Hedya salicella L.	●	
' *dimidioalbana* Retz.	●	
' *pruniana* Hb.	●	
' *dimidiana* Cl.	●	
' *ochroleucana* Fröl.		●
Metendothenia atropunctana Zett.		●
Celypha rufana Scop.	●	
' *striana* D. & S.	●	
' *lacunana* D. & S.	●	●
' *rivulana* Scop.	●	●
Phiaris palustrana Lien. & Z.	●	
Olethreutes arcuella Cl.	●	
Lobesia botrana D. & S.	●	
Spilonota ocellana D. & S.	●	●
' *laricana* Heinem.	●	
Epinotia ramella L.	●	
' *tetraquetrana* Haw.	●	
' *huebneriana* Kocak	●	
Zeiraphera isertana F.	●	●
Crocidosema plebejana Z.	●	
Eucosma cana Haw.	●	●
' *albidulana* H.S.		●
Gypsonoma dealbana Fröl.		●
' *sociana* Haw.	●	
Epiblema sticticana F.	●	
' *foenella* L.	●	
Notocelia cynosbatella L.	●	
' *uddmanniana* L.	●	
Rhyacionia buoliana D. & S.	●	●
' *pinicolana* Dbld.		●
Eucosmomorpha albersana Hb.	●	
Ancylis laetana F.		●
' *obtusana* Haw.	●	
' *selenana* Guenee	●	
' *unculana* Haw.	●	

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

SPECIES	A	B
' *apicella* D. & S.	●	
' *diminutana* Haw.	●	
Cydia compositella F.		●
' *pomonella* Hb.	●	
' *fagiglandana* Z.	●	
Lathronympha strigana F.	●	
Alucitidae		
Alucita huebneri Wallgr.	●	
Pterophoridae		
Cnaemidophorus rhododactyla D. & S.	●	
Gillmeria tetradactyla L.		●
Amblyptilia punctidactyla Haw.	●	
Adaina microdactyla Hb.	●	
Pterophorus pentadactylus L.	●	●
Emmelina monodactyla L.	●	
Pyralidae		
Galleria mellonella L.	●	
Lamoria anella D. & S.	●	
Hypsopygia costalis F.	●	
Synaphe punctalis F.	●	●
Pyralis farinalis L.	●	●
Aglossa pinguinalis L.	●	
Endotricha flammealis D. & S.	●	●
Cryptoblabes bistriga Haw.	●	
Oncocera semirubella Scop.	●	
Sciota adelphella F.v.R.	●	
Phycita roborella D. & S.		●
Dioryctria abietella D. & S.	●	●
' *mutatella* Fuchs	●	●
' *sylvestrella* Ratzeb.		●
Elegia similella Zinck.	●	
Etiella zinckenella Tr.	●	
Trachonitis cristalis Hb.	●	
Nephopterix angustella Hb.	●	
Acrobasis glaucella Stdgr.		●
Trachycera advenella Zinck.		●
Asarta aethiopella Dup.	●	
Eccopisa effractella Z.	●	
Euzophera pinguis Haw.	●	
Nyctegretis lineana Scop.	●	
Ancylosis cinnamomella Dup.	●	
Homoeosoma sinuella F.	●	●
' *nebulella* D. & S.	●	
Phycitodes binaevella Hb.	●	
' *albatella* Rag.	●	●
Plodia interpunctella Hb.	●	
Ephestia kuehniella Z.	●	●
' *elutella* Hb.	●	
Cadra figulilella Gregs.	●	
' *cautella* Walk.	●	
Crambidae		
Chilo phragmitellus Hb.	●	●
Haimbachia cicatricella Hb.	●	

SPECIES	A	B
Calamatropha paludella Hb.	●	
Chrysoteuchia culmella L.	●	●
Crambus pascuella L.	●	●
' *pratella* L.	●	●
' *lathoniellus* Zincken	●	●
' *perlella* Scop.	●	●
Agriphila tristella D. & S.	●	●
' *inquinatella* D. & S.	●	
' *selasella* Hb.	●	●
' *straminella* D. & S.	●	●
' *geniculea* Haw.	●	●
' *tolli* Blesz.	●	●
Catoptria mytiella Hb.	●	
' *pinella* L.	●	●
' *margaritella* D. & S.	●	
' *falsella* D. & S.	●	
' *verella* Z.		●
Chrysocrambus linetellus F.	●	
Thisanotia chrysonuchella Scop.	●	
Pediasia luteella D. & S.	●	●
' *contaminella* Hb.	●	
Talis quercella D. & S.	●	
Elophia nymphaeata L.	●	●
Cataclysta lemnata L.	●	
Paraponix stratiotatum L.	●	
Nymphula stagnata Don.	●	
Schoenobius forficella Thnbg.	●	
Donacaula mucronella D. & S.		●
Scoparia basistrigalis Knaggs	●	●
' *ambigualis* Tr.		●
' *pyralella* D. & S.	●	
Dipleurina lacustrata Panz.	●	
Eudonia pallida Curt.	●	
' *mercurella* L.	●	●
Evergestis aenealis D. & S.	●	
' *forficalis* L.	●	
' *pallidata* Hufn.	●	
Pyrausta aurata Scop.	●	
' *purpuralis* L.	●	●
' *despicata* Scop.	●	●
Ecpyrrhorrhoe rubiginalis Hb.	●	●
Sitochroa palealis D. & S.	●	
' *verticalis* L.	●	
Microstega pandalis Hb.	●	●
Ostrinia palustralis Hb.	●	
' *nubilalis* Hb.	●	●
Eurrhypara hortulata L.	●	●
Perinephila lancealis D. & S.	●	
Phlyctaenia coronata Hufn.	●	●
' *perlucidalis* Hb.	●	
' *stachydalis* Germ.	●	●
Anania verbascalis D. & S.	●	●
Opsibotys fuscalis D. & S.		●

SPECIES	A	B
Nascia cilialis Hb.	●	●
Udea accolalis Z.	●	●
' *ferrugalis* Hb.	●	●
Mecyna flavalis D. & S.	●	
Nomophila noctuella D. & S.	●	●
Dolichartria punctalis D. & S.		●
Pleuroptya ruralis Scop.	●	●
Agrotera nemoralis Scop.	●	
Lasiocampidae		
Malacosoma neustrium L.	●	●
Trichiura crataegi L.	●	
Poecilocampa populi L.	●	●
Lasiocampa quercus L.	●	●
' *trifolii* D. & S.	●	●
Macrothylacia rubi L.	●	
Euthrix potatoria L.	●	●
Phyllodesma tremulifolia Hb.	●	
Gastropacha quercifolia L.	●	●
' *populifolia* Esp.	●	●
Odonestis pruni L.	●	●
Dendrolimus pini L.	●	●
Lemoniidae		
Lemonia taraxaci D. & S.		●
Endromidae		
Endromis versicolora L.		●
Sphingidae		
Agrius convolvuli L.	●	
Acherontia atropos L.	●	
Sphinx ligustri L.	●	
Hyloicus pinastri L.	●	●
Marumba quercus D. & S.	●	
Smerinthus ocellatus L.	●	●
Mimas tiliae L.	●	
Laothoe populi L.	●	●
Hemaris tityus L.	●	●
' *fuciformis* L.	●	●
Macroglossum stellatarum L.	●	●
Hyles euphorbiae L.	●	
' *livornica* Esp.	●	●
Deilephila elpenor L.	●	
' *porcellus* L.	●	
Saturnidae		
Saturnia pyri D. & S.	●	●
' *pavonia* L.	●	●
Antheraea yamamai Guer.-M.	●	
Aglia tau L.	●	●
Hesperiidae		
Carterocephalus palaemon Pall.	●	●
Heteropterus morpheus Pall.	●	●
Thymelicus sylvestris Poda	●	●
' *lineolus* O.	●	●
Hesperia comma L.	●	●
Ochlodes venatus Brem & G	●	●

SPECIES	A	B
Erynnis tages L.	●	●
Carcharodus alceae Esp.	●	
' *flocciferus* Z.	●	
Spialia sertorius Hffmgg.	●	●
Pyrgus malvae L.	●	●
' *armoricanus* Obth.	●	●
' *alveus* Hb.	●	●
Papilionidae		
Adoritis mnemosyne L.	●	●
Zerynthia polyxena D. & S.	●	●
Papilio machaon L.	●	●
Iphiclides podalirius L.	●	●
Pieridae		
Leptidea sinapis L.	●	●
' *reali* L.	●	●
Colias myrmidone Reissin.		●
' *crocea* Esp.	●	●
' *hyale* Geoffrey	●	●
' *alfacariensis* L.	●	
' *erate* Ribbe	●	
Gonepteryx rhamni Esp.	●	●
Aporia crataegi L.	●	●
Pieris brassicae L.	●	●
' *rapae* L.	●	●
' *napi* L.	●	●
Pontia daplidice L.	●	●
Anthocharis cardamines L.	●	●
Nymphalidae		
Apatura iris L.	●	●
' *ilia* L.	●	●
Limenitis camilla D. & S.	●	●
' *populi* L.		●
' *reducta* L.	●	●
Neptis sappho Stgr.	●	●
' *rivularis* Pall.	●	●
Nymphalis polychloros Scop.	●	●
' *antiopa* L.	●	●
Inachis io L.	●	●
Vanessa atalanta L.	●	●
Cynthia cardui L.	●	●
Aglais urticae L.	●	●
Polygonia c-album L.	●	●
Araschnia levana L.	●	●
Argynnis paphia L.	●	●
Mesoacidalia aglaja L.		●
Fabriciana adippe L.	●	●
' *niobe* D. & S.	●	●
Issoria lathonia L.	●	●
Brenthis daphne L.	●	●
' *hecate* D. & S.	●	●
' *ino* D. & S.	●	●
Clossiana selene Rott.	●	●
' *euphrosyne* D. & S.	●	●
' *dia* L.	●	●

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

SPECIES	A	B
Melitaea cinxia L.	●	●
' *phoebe* L.	●	●
' *didyma* D. & S.	●	●
' *diamina* Esp.		●
Mellicta athalia Lang.	●	●
' *aurelia* Rott.		●
' *britomartis* Nick.		●
Hypodryas maturna Assmann	●	●
Eurodryas aurinia L.	●	●
Satyridae		
Melanargia galathea Rott.	●	●
Chazara briseis L.	●	●
Minois dryas L.	●	●
Kanetisia circe Scop.	●	●
Erebia aethiops F.	●	●
Maniola jurtina Esp.	●	●
Aphantopus hyperantus L.	●	●
Coenonympha arcania L.	●	●
' *glycerion* L.	●	●
' *pamphilus* Brkh.	●	●
Pararge aegeria L.	●	●
Lasiommata megera L.	●	●
' *maera* L.	●	●
Lopinga achine L.	●	●
Riodinididae		
Hamearis lucina Scop.	●	●
Lycaenidae		
Callophrys rubi L.	●	●
Thecla betulae L.	●	
Quercusia quercus L.	●	●
Fixsenia pruni L.	●	●
Satyrium spini L.	●	●
' *ilicis* D. & S.	●	●
' *acaciae* Esp.	●	
Lycaena phlaeas F.	●	●
' *dispar* L.	●	●
' *virgaureae* Haw.	●	●
' *tityrus* Werneb.	●	●
' *hippothoe* Haw.	●	●
Cupido minimus L.	●	●
Everes argiades Poda	●	●
Celastrina argiolus L.	●	●
Glaucopsyche alexis Fsl.		●
Maculinea teleius Pall	●	●
' *nausithous* L.	●	●
Plebejus argus Poda	●	
Lycaeides idas Bergstr.	●	●
' *argyrognomon* Bergstr.	●	●
Aricia agestis L.	●	●
Cyaniris semiargus L.	●	●
Lysandra coridon Bergstr.	●	●
' *bellargus* D. & S.	●	
Meleageria daphnis Rott.	●	
Polyommatus icarus Poda	●	●

SPECIES	A	B
Drepanidae		
Falcaria lacertinaria Rott.		●
Watsonalla binaria D. & S.	●	●
' *cultraria* Rott.		●
Drepana falcataria L.	●	●
' *curvatula* Hufn.	●	●
Sabra harpagula F.	●	●
Cilix glaucata L.	●	●
Thyatira batis Bkh.	●	●
Habrosyne pyritoides Esp.	●	●
Tethea or Scop.	●	●
Tetheella fluctuosa L.	●	●
Ochropacha duplaris Hufn.	●	●
Achlya flavicornis Goeze	●	●
Geometridae		
Archiearis parthenias Hb.	●	●
' *notha* L.	●	●
Alsophila aescularia L.	●	●
' *aceraria* L.	●	
Pseudoterpna pruinata Hb.		●
Geometra papilionaria D. & S.	●	●
Thetidia smaragdaria D. & S.	●	●
Hemithea aestivaria Hufn.	●	●
Chlorissa viridata L.	●	●
' *cloraria* F.		●
Thalera fimbrialis Hb.		●
Hemistola biliosata L.	●	
Jodis lactearia Hb.	●	●
' *putata* Scop.		●
Scopula immorata deVill.	●	●
' *corrivalaria* L.	●	
' *caricaria* L.	●	
' *nemoraria* L.	●	●
' *nigropunctata* Kretsch.	●	●
' *virgulata* Reutti	●	
' *ornata* Hb.	●	
' *rubiginata* Hufn.	●	
' *marginepunctata* D.&S.	●	●
' *incanata* Scop.		●
' *immutata* Hufn.	●	●
' *flaccidaria* Goeze	●	
Idaea rufaria L.	●	
' *ochrata* L.	●	●
' *serpentata* Z.	●	●
' *aureolaria* Hb.	●	
' *muricata* Scop.		●
' *rusticata* Hufn.	●	
' *biselata* D. & S.	●	●
' *inquinata* Hufn.	●	
' *dilutaria* D. & S.	●	
' *humiliata* Hufn.	●	●
' *virgularia* Scop.	●	
' *dimidiata* Hb.	●	●
' *emarginata* Hufn.		●

SPECIES	A	B
' *aversata* Hb.	●	●
' *straminata* Hufn.	●	
' *deversaria* L.	●	
Cyclophora pendularia L.	●	●
' *albiocellaria* Stgr.	●	
' *annulata* Bkh.	●	●
' *albipunctata* H.S.	●	
' *porata* Cl.	●	●
' *quercimontaria* Hb.	●	●
' *punctaria* Schulze	●	●
' *linearia* Hufn.	●	●
Timandra griseata F.	●	●
Rhodometra sacraria Bastelb.	●	
Rhodostrophia vibicaria L.	●	●
Lythria cruentaria Hb.	●	
Scotopteryx moeniata Pet.	●	●
' *bipunctaria* L.	●	●
' *chenopodiata* Cl.	●	●
' *mucronata* Hufn.		●
' *luridata* Scop.		●
Orthonama obstipata D. & S.	●	●
Xanthorhoe biriviata L.	●	●
' *designata* Scop.	●	
' *spadicearia* Hufn.	●	●
' *ferrugata* F.	●	●
' *quadrifasciata* Bkh.	●	●
' *montanata* Hufn.	●	●
' *fluctuata* D. & S.	●	
Catarhoe rubidata L.	●	●
' *cuculata* Cl.	●	●
Epirrhoe hastulata D. & S.	●	●
' *tristata* L.	●	
' *alternata* D. & S.	●	●
' *galiata* Hufn.	●	●
Camptogramma bilineata Hb.	●	●
Mesoleuca albicillata L.	●	●
Pelurga comitata Müll.	●	
Lampropteryx suffumata D. & S.		●
Cosmorhoe ocellata L.	●	●
Nebula salicata L.	●	
Eulithis mellinata L.	●	
' *pyraliata* D. & S.	●	
Ecliptopera silaceata L.	●	●
' *capitata* Hb.	●	
Chloroclysta siterata F.		●
' *truncata* D. & S.	●	
Plemyra rubiginata D. & S.	●	
Thera variata H.S.		●
' *juniperata* Hufn.	●	
Colostygia pectinataria Hufn.	●	●
Hydriomena furcata D. & S.		●
' *impluviata* D. & S.	●	●
Horisme vitalbata L.	●	●

SPECIES	A	B
' *tersata* Kn.	●	
Melanthia procellata Thnbg.	●	●
Pareulype berberata D. & S.	●	
Hyria undulata D. & S.	●	●
Triphosa dubitata D. & S.	●	
Philereme vetulata D. & S.	●	
' *transversata* D. & S.	●	
Euphyia biangulata L.	●	●
' *unangulata* L.	●	●
Epirrita dilutata D. & S.	●	●
' *autumnata* Hufn.	●	
Operophtera brumata Haw.	●	
Perizoma alchemillatum Haw.	●	●
' *lugdunarium* D. & S.	●	●
' *flavofasciatum* Bkh.	●	●
Eupithecia plumbeolata L.	●	
' *linariata* L.	●	
' *pyreneata* H.S.	●	
' *laquearia* Thnbg.	●	
' *centaureata* Haw.	●	●
' *selinata* F.	●	●
' *veratraria* Mab.	●	
' *goosensiata* H.S.	●	
' *assimilata* D. & S.		●
' *tripunctaria* H.S.	●	
' *succenturiata* H.S.	●	
' *indigata* Mabille		●
' *virgaureata* Dbld.	●	●
' *abbreviata* H.S.	●	●
' *lanceata* L.	●	
' *tantillaria* Hb.	●	
Gymnoscelis rufifasciata Doubled.	●	●
Chloroclystis v-ata Stph.	●	●
Calliclystis rectangulata Hb.	●	
' *debiliata* Bsd.	●	
Anticollix sparsata Haw.	●	●
Aplocera efformata Haw.	●	
Euchoeca nebulata L.	●	●
Asthena albulata Hb.	●	●
' *anseraria* Tr.	●	●
Hydrelia flammeolaria Gn.	●	●
' *testaceata* Scop.	●	
Minoa murinata Hufn.	●	●
Pterapherapteryx sexalata H.S.	●	
Acasis viretata Hufn.	●	
Abraxas grossulariata Donocan	●	●
Calospilos sylvatus Scop.	●	●
Lomaspilis marginata Retz.	●	●
Ligdia adustata Hb.	●	●
Stegania dilectaria L.	●	
Semiothisa notata Scop.	●	●
' *alternata* L.	●	●
' *liturata* D. & S.	●	●

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

SPECIES	A	B
' *clathrata* Hb.	●	●
' *glarearia* L.	●	●
Tephrina arenacearia D. & S.	●	
Cepphis advenaria Cl.	●	●
Petrophora chlorosata L.		●
Plagodis pulveraria Brahm.	●	●
' *dolabraria* D. & S.	●	●
Opistograptis luteolata Hb.	●	
Epione repandaria Scop.	●	●
Pseudopanthera macularia L.	●	●
Hypoxystis pluviaria L.		●
Apeira syringaria L.	●	●
Ennomos autumnaria Hufn.	●	●
' *quercinaria* L.	●	●
' *fuscantaria* F.	●	●
' *erosaria* L.		●
Selenia dentaria Werneb.	●	●
' *lunularia* Hufn.	●	●
' *tetralunaria* Stph.	●	●
Artiora evonymaria Hb.	●	
Crocallis elinguaria F.	●	
Ourapteryx sambucaria Hb.	●	●
Colotois pennaria Hufn.	●	●
Angerona prunaria D. & S.	●	●
Lycia hirtaria L.	●	●
Biston stratarius L.	●	●
' *betularius* L.	●	●
Agriopis aurantiaria L.	●	
' *marginaria* Cl.	●	
Erannis defoliaria Hufn.	●	●
Peribatodes rhomboidarius L.	●	
' *secundarius* Hb.	●	●
Cleora cinctaria F.	●	
Alcis repandata Cl.	●	●
Boarmia roboraria D. & S.	●	●
' *danieli* Esp.	●	
Serraca punctinalis D. & S.	●	●
Ascotis selenaria L.	●	●
Ectropis crepuscularia D. & S.	●	●
Paradarisa consonaria Stgr.	●	
Parectropis similaria Whrl.	●	●
Aethalura punctulata Scop.	●	●
Ematurga atomaria D. & S.	●	●
Bupalus piniaria Hb.	●	●
Cabera pusaria Hb.	●	●
' *exanthemata* Hufn.	●	
Lomographa bimaculata D. & S.	●	●
' *temerata* L.	●	●
Campaea margaritata L.	●	
Hylaea fasciaria L.		●
Siona lineata Scop.	●	●
Notodontidae		
Phalera bucephala F.	●	●

SPECIES	A	B
' *bucephaloides* D. & S.	●	
Cerura vinula L.	●	●
' *erminea* L.	●	●
Furcula bicuspis Scop.	●	●
' *furcula* L.		●
' *bifida* O.	●	●
Stauropus fagi L.	●	●
Peridea anceps Esp.		●
Notodonta dromedarius Bkh.	●	●
' *ziczac* Cl.	●	●
' *tritopha* Brahm	●	●
Drymonia velitaris L.		●
' *melagona* Goeze	●	●
' *dodonea* L.	●	●
' *ruficornis* L.	●	●
' *querna* D. & S.	●	●
Harpyia milhauseri Hufn.		●
Pheosia tremula Bkh.	●	●
' *gnoma* D. & S.	●	●
Ptilophora plumigera Hufn.	●	●
Pterostoma palpinum D. & S.	●	●
Ptilodon capucina F.	●	●
Ptilodontella cucullina Cl.	●	●
Spatalia argentina F.	●	●
Gluphisia crenata D. & S.	●	●
Clostera anachoreta Cl.	●	
' *curtula* L.	●	●
' *anastomosis* D. & S.	●	●
' *pigra* D. & S.		●
Thaumetopoea processionea Esp.	●	
Lymantriidae		
Calliteara pudibunda D. & S.	●	●
Pentophera morio L.	●	●
Orgyia antiqua L.	●	●
Lymantria dispar Hufn.	●	●
' *monacha* L.		●
Arctornis l-nigrum L.	●	
Leucoma salicis Stgr.	●	●
Euproctis chrysorrhoea L.	●	●
Sphrageidus similis L.	●	●
Arctiidae		
Thumatha senex L.	●	
Miltochrista miniata L.	●	●
Cybosia mesomella Müll.	●	●
Pelosia muscerda L.	●	●
Atolmis rubricollis L.		●
Lithosia quadra Fsl.	●	●
Eilema deplana Hb.	●	●
' *griseola* J.Forst.	●	●
' *lurideola* L.		●
' *complana* Hufn.	●	●
' *caniola* L.	●	
' *sororcula* L.	●	●

SPECIES	A	B
Coscinia striata Esp.	●	●
Phragmatobia fuliginosa Hb.	●	●
Spilosoma luteum Zinck.	●	●
' *lubricipedum* L.	●	●
' *urticae* Daniel	●	
Hyphantria cunea Hb.	●	●
Diaphora mendica Hufn.		●
Rhyparia purpurata L.		●
Diacrisia sannio L.	●	●
Hyphoraia aulica Hufn.	●	
Arctia caja L.	●	●
' *villica* Esp.		●
Callimorpha dominula Dry.	●	●
Euplagia quadripunctaria Cl.	●	●
Thyria jacobaeae L.	●	
Syntomis phegea L.	●	●
Noctuidae		
Idia calvaria L.	●	●
Trisateles emortualis L.	●	●
Paracolax tristalis L.	●	●
Herminia tarsicrinalis L.	●	●
Treitschkendia tarsipennalis Poda	●	●
Quaramia griseatis L.	●	●
Hypertrocon tenuialis L.	●	
Pechipogo strigilata D. & S.	●	●
Polypogon tentacularia D. & S.	●	●
Zanclognatha lunalis F.		●
Rivula sericealis Knoch	●	●
Parascotia fuliginaria Tr.	●	
Colobochyla salicalis D. & S.	●	●
Schrankia costaestrigalis Rebel	●	
Hypena proboscidalis L.	●	●
' *rostralis* L.	●	●
' *crassalis* Scop.	●	●
Phytometra viridaria Scop.	●	●
Scoliopteryx libatrix L.	●	
Catocala sponsa D. & S.	●	●
' *dilecta* Steph.		●
' *fraxini* L.	●	●
' *nupta* L.	●	
' *elocata* F.	●	
' *promissa* Cl.		●
' *electa* L.	●	
' *fulminea* L.	●	●
Minucia lunaris Hb.	●	
Lygephila pastinum L.	●	●
Catephia alchymista L.		●
Aedia funesta Esp.	●	●
Tyta luctuosa D. & S.	●	
Callistege mi View.	●	●
Euclidia glyphica Scop.	●	●
Laspeyria flexula D. & S.	●	●
Meganola togatulalis Tr.		●

SPECIES	A	B
' *strigula* D. & S.		●
' *albula* Esp.	●	●
Nola cucullatella D. & S.	●	
' *confusalis* Cl.	●	
' *cicatricalis* L.	●	
' *aerugula* D. & S.		●
Nycteola revayana Hb.		●
' *degenerana* D. & S.	●	●
' *asiatica* D. & S.	●	
Earias clorana L.	●	●
Bena prasinana H.S.	●	●
Pseudoips fagana Tr.	●	●
Panthea coenobita Hb.		●
Colocasia coryli Scop.	●	●
Diloba caeruleocephala Hb.	●	
Moma alpium Krul.	●	●
Acronicta alni L.	●	●
' *cuspis* L.	●	
' *tridens* F.	●	●
' *psi* Esp.	●	●
' *aceris* L.	●	●
' *leporina* L.	●	●
' *megacephala* Osb.	●	●
' *strigosa* L.	●	●
' *auricoma* Hb.		●
' *rumicis* D. & S.	●	●
Craniophora ligustri L.	●	●
Simyra albovenosa L.	●	
Cryphia fraudatricula L.	●	
' *algae* D. & S.	●	●
' *ereptricula* D. & S.	●	●
Emmelia trabealis D. & S.	●	●
Protodeltode pygarga L.	●	●
Deltode deceptoria D. & S.	●	
' *uncula* Goeze	●	
' *bankiana* Hb.	●	
Pseudeustrotia candidula F.	●	●
Eublemma parva Tr.	●	
Lamprotes c-aureum Scop.		●
Diachrysia chrysitis Hufn.	●	●
' *zosimi* Scop.	●	
' *chryson* Cl.	●	●
Macdunnoughia confusa F.	●	●
Plusia festucae D. & S.	●	
Autographa gamma Hb.	●	●
' *pulchrina* Knoch	●	
Trichoplusia ni L.	●	
Abrostola triplasia Hb.	●	●
' *trigemina* Esp.	●	
' *asclepiadis* Steph.	●	●
Cucullia umbratica L.	●	●
' *scrophulariae* L.	●	●
' *verbasci* Haw.	●	
' *prenanthis* Hb.		●

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

SPECIES	A	B
Calophasia lunula L.	●	●
Pyramidcampa pyramidea Werneb.	●	●
Adamphipyra livida D. & S.	●	●
Amphipyra tragopoginis L.	●	●
Heliothis viriplaca D. & S.	●	●
' *maritima bulgarica* Draudt	●	
' *peltigera* Bsd.	●	●
Pyrrhia umbra Hufn.	●	●
Elaphria venustula L.	●	
Panemeria tenebrata D. & S.	●	●
Caradrina morpheus Cl.		●
Platyperigea kadenii Hufn.	●	
Paradrina clavipalpis Draudt	●	
Hoplodrina octogenaria D. & S.		●
' *blanda* Hufn.	●	●
' *ambigua* Hb.	●	●
Atypha pulmonaris Scop.	●	●
Spodoptera exigua Hufn.	●	●
Chilodes maritima Frr.	●	
Dypterygia scabriuscula Scop.	●	●
Rusina ferruginea Goeze		●
Mormo maura D. & S.	●	
Talpophila matura D. & S.	●	
Trachea atriplicis Esp.	●	●
Euplexia lucipara Hb.	●	●
Phlogophora meticulosa Tauscher	●	●
Actinotia polyodon L.	●	●
Callopistria juventina Esp.		●
Eucarta virgo L.	●	●
Ipimorpha retusa Hufn.	●	●
Parastichtis suspecta L.		●
Mesogona acetosellae L.	●	●
Cosmia pyralina L.	●	●
' *trapezina* Cl.	●	●
Xanthia togata Stoll	●	
' *icteritia* Tr.		●
' *ocellaris* L.	●	
' *citrago* Hb.	●	●
Fissipunctia ypsillon D. & S.		●
Agrochola lychnidis D. & S.		●
' *circellaris* L.	●	●
' *lota* Esp.	●	
' *helvola* Hufn.	●	
' *humilis* Bkh.		●
' *litura* L.	●	
' *laevis* Hb.	●	
Eupsilia transversa D. & S.	●	●
Conistra vaccinii D. & S.	●	●
' *rubiginea* Hufn.	●	●
Brachionycha sphinx Cl.	●	●

SPECIES	A	B
Brachylomia viminalis L.		●
Lithophane hepatica D. & S.	●	●
' *ornitopus* L.	●	●
' *furcifera* Hufn.	●	
Xylena vetusta L.	●	
' *exoleta* Scop.	●	
Allophyes oxyacanthae Hufn.	●	
Valeria oleagina F.	●	
Griposia aprilina Cl.	●	
Antitype chi Hufn.	●	●
Ammoconia caecimacula Hufn.		●
Blepharita satura Hb.	●	●
Mniotype solieri L.	●	
Apamea monoglypha L.	●	●
' *sicula syriaca* D. & S.	●	
' *lithoxylea* L.		●
' *sublustris* L.		●
' *crenata* D. & S.	●	
' *anceps* D. & S.		●
' *sordens* Bsd.	●	
' *unanimis* Hufn.	●	
' *illyria* Osth.	●	
Loscopia scolopacina D. & S.		●
Leucapamea ophiogramma Esp.		●
Oligia strigilis Hufn.	●	●
' *latruncula* D. & S.	●	●
' *fasciuncula* Hufn.	●	
Mesoligia furuncula Hb.	●	
' *literosa* Frr.		●
Mesapamea secalis Esp.	●	●
' *didyma* Esp.	●	●
Luperina testacea L.	●	
Rhizedra lutosa D. & S.	●	
Amphipoea oculea Haw.		●
Hydraecia micacea D. & S.	●	
Gortyna flavago Haw.	●	
Celaena leucostigma L.	●	
Nonagria typhae Esp.	●	
Phragmatiphila nexa D. & S.	●	
Archanara sparganii Hb.	●	
Chortodes fluxa L.		●
' *pygmina* Esp.	●	
Charanyca trigrammica D. & S.	●	●
Calocestra microdon Hb.	●	
Discestra trifolii Thnbg.	●	●
Lacanobia w-latinum Hb.		●
' *splendens* Esp.		●
' *oleracea* Hb.	●	●
' *thalassina* Haw.	●	
' *contigua* Hufn.	●	●
' *suasa* Guenee	●	●
Hada nana Hufn.	●	●

SPECIES	A	B
Hecatera dysodea Hufn.	●	●
' *bicolorata* Hb.	●	●
Hadena bicruris L.	●	●
' *luteago* Hufn.	●	
' *compta* D. & S.		●
' *confusa* D. & S.	●	
Aneda rivularis Hufn.	●	●
Heliophobus reticulata D. & S.		●
Melanchra persicariae Hufn.	●	●
Ceramica pisi Hufn.	●	●
Mamestra brassicae Hufn.	●	●
Polia bombycina D. & S.		●
' *nebulosa* Hufn.		●
Leucania obsoleta F.	●	
' *comma* Goeze		●
Mythimna turca L.	●	●
' *conigera* L.	●	
' *ferrago* L.	●	●
' *albipuncta* Hufn.	●	●
' *vitellina* Hufn.	●	●
' *straminea* Hb.	●	●
' *impura* L.	●	●
' *pallens* L.	●	●
' *l-album* D. & S.	●	●
Senta flammea F.	●	
Orthosia incerta D. & S.	●	●
' *gothica* Hb.	●	●
' *cruda* Tr.	●	
' *miniosa* Hb.	●	
' *opima* L.		●
' *cerasi* L.	●	●
' *gracilis* Curtis	●	
' *munda* Hufn.	●	●

SPECIES	A	B
Egira conspicillaris L.		●
Tholera cespitis D. & S.	●	●
Neuronia decimalis D. & S.	●	
Pachetra sagittigera Hb.	●	●
Axylia putris F.	●	●
Ochropleura plecta D. & S.	●	●
Diarsia brunnea D. & S.		●
' *rubi* L.	●	●
Noctua pronuba D. & S.	●	●
' *fimbriata* Poda	●	●
' *orbona* Hufn.		●
' *comes* L.	●	
' *interposita* L.		●
' *janthina* D. & S.	●	●
' *tertia* View.		●
Standfussiana simulans L.	●	
Opigena polygona Schreber		●
Xestia c-nigrum Hufn.	●	●
' *ditrapezium* Hb.		●
' *triangulum* Hb.	●	●
' *baja* D. & S.	●	●
' *rhomboidea* M.&M.&F.	●	●
' *castanea* Esp.	●	
' *xanthographa* D. & S.	●	
' *cohaesa* L.	●	
Eugraphe sigma D. & S.		●
Cerastis rubricosa Hufn.	●	●
Anaplectoides prasina D. & S.		●
Peridroma saucia Esp.	●	●
Agrotis ipsilon Frr.	●	
' *exclamationis* D. & S.	●	●
' *segetum* H.S.	●	●
' *cinerea* D. & S.	●	●

*

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

References

ACCETTO, M., 1986, Poplavni gozdovi v Prekmurju.- Rokopisni elaborat, Ljubljana.

ATLAS SLOVENIJE.- Založba Mladinska knjiga in Geodetski zavod Slovenije, Ljubljana, 1992, pp. 384.

CARNELUTTI, J., 1992a, Rdeči seznam ogroženih metuljev (Macrolepidoptera) v Sloveniji.- Varstvo narave, Ljubljana, 17, pp. 61 - 104.

CARNELUTTI, J., 1992b, Popravki/errata.- Varstvo narave, Ljubljana, 18, pp. 189 - 190.

CARNELUTTI, J., 1993, Zoogeografska regionalizacija Slovenskega in mejnega ozemlja.- Ljubljana, neobjavljeno.

CARNELUTTI, J., et. al. 1975, Poročilo o inventarizaciji favne, vegetacije, škodljivcev in rastlinskih bolezni na območju jugoslovansko-avstrijske meje 1974-1975.- SAZU, Biološki inštitut Jovana Hadžija, Ljubljana, pp. 338.

CEGNAR, T., et al. 1996, Climate of Slovenia.- Ministry of Environment and Physical Plannig, Hydrometeorological Institute of Slovenia, Ljubljana, pp. 70.

ČARNI, A., 1987, Flora in vegetacija okolice Prosenjakovcev.- Diplomska naloga, BF, VTOZD za biologijo, pp. 102.

GOMBOC, S., 1993, *Apamea sicula syriaca* (Osthelder, 1933), nova vrsta za slovensko favno metuljev, najdena v Prekmurju.- Acta entomologica Slovenica, Ljubljana, 1: 41 - 42.

GOMBOC, S., 1993, *Mellicta britomartis* Assman, 1847 (Nymphalidae) najdena tudi v Prekmurju.- ACTA entomologica Slovenica, Ljubljana, 1: 37 - 39.

GOMBOC, S., 1996, Vier weitere Neufunde für die Großschmetterlingsfauna Sloweniens.- Acta entomologica Slovenica, Ljubljana, 4(2): 101 - 105.

HABELER, H., 1971, Die Großschmetterlingsfauna des Bezirkes Weiz.- Sonderfolge, Geschichte und Landschaft in Einzeldarstellungen, Weiz, Lieferung 1: 1 - 72.

HABELER, H., 1972, Die Großschmetterlingsfauna des Bezirkes Weiz.- Sonderfolge, Geschichte und Landschaft in Einzeldarstellungen, Weiz, Lieferung 2: 73 - 112.

HABELER, H., 1973, Die Großschmetterlingsfauna des Bezirkes Weiz.- Sonderfolge, Geschichte und Landschaft in Einzeldarstellungen, Weiz, Lieferung 3: 113 - 128.

HABELER, H., 1977, Die Großschmetterlingsfauna des Bezirkes Weiz.- Sonderfolge, Geschichte und Landschaft in Einzeldarstellungen, Weiz, Lieferung 4: 129 - 152.

HABELER, H., 1978, Die Großschmetterlingsfauna des Bezirkes Weiz.- Sonderfolge, Geschichte und Landschaft in Einzeldarstellungen, Weiz, Lieferung 5: 153 - 213.

HABELER, H., 1983, Phaenologische Studien an nachtaktiven Großschmetterlingen der Grazer Bucht.- Mitt. naturwiss. Ver. Steiermark, 113: 133 - 141.

HABELER, H., 1985, Die vitalsten und derzeit noch häufigen Großschmetterlinge der Grazer Bucht.- Mitt. naturwiss. Ver. Steiermark, Graz, 115: 95 - 104.

HAUSMANN, A., 1990, Zur Dynamik von Nachtfalter-Artenspektren. Turnover und Dispersions-verhalten als Elemente von Verbreitungsstrategien.- Spixiana Suppl., 16: 1 - 222.

HUEMER, P. & TARMAN, G., 1993, Die Schmetterlinge Österreichs (Lepidoptera). Systematisches Verzeichnis mit Verbreitungsangaben für die einzelnen Bundesländer.- Beilageband 5 zu den Veröffentlichungen des Museum Ferdinandeum, Innsbruck, pp. 224.

HUEMER, P., 1996, Schmetterlinge (Lepidoptera) im Bereich der Naturschutzgebiete Banser Ried und Matschels (Voralberg) Diversität- Ökologie- Gefährdung.- Voralberger Naturschau, 2: 141 - 202.

KARSHOLT, O., & RAZOWSKI, J., (eds) 1996, The Lepidoptera of Europe. A Distributional Checklist.- Apollo Books, Stenstrup, pp. 380.

LERAUT, P., 1980, Liste Systématique et Synonymique des Lépidoptères de France, Belgique et Corse.- Alexanor Suppl., Paris, pp. 334.

LERAUT, P., 1997, Liste Systématique et Synonymique des Lépidoptères de France, Belgique et Corse.- (deuxième édition), Alexanor Suppl., Paris.
MAČEK, J., 1969, Listni zavrtači Slovenije. III (The leaf miners of Slovenia III).- Zbornik Biotehniške fakultete, Kmetijstvo, 16, Ljubljana, pp. 75 - 79.
MAČEK, J., 1976,: Listni zavrtači Slovenije VI (The leaf miners of Slovenia VI).- Zbornik Biotehniške fakultete, Kmetijstvo, 28, Ljubljana, pp. 157 - 163.
MAČEK, J. 1978, Listni zavrtači Slovenije. VIII (The leaf miners of Slovenia VIII).- Zbornik Biotehniške fakultete, Kmetijstvo, 31, Ljubljana, pp. 157 - 164.
MAČEK, J,. 1979, Listni zavrtači Slovenije. IX (The leaf miners of Slovenia IX).- Zbornik Biotehniške fakultete, Kmetijstvo, 33, Ljubljana, pp. 239 - 248.
MAČEK, J., 1980, Listni zavrtači Slovenije. X (The leaf miners of Slovenia X).- Zbornik Biotehniške fakultete, Kmetijstvo, 36, Ljubljana, pp. 141 - 146.
MAČEK, J., 1984a, Listni zavrtači Slovenije. XIII (The leaf miners of Slovenia XIII).- Zbornik Biotehniške fakultete, Kmetijstvo, 43, Ljubljana, pp. 241 - 248.
MAČEK, J., 1984b, Listni zavrtači Slovenije. XIV (The leaf miners of Slovenia XIV).- Zbornik Biotehniške fakultete, Kmetijstvo, 43, Ljubljana, pp. 249 - 256.
MAČEK, J., 1986, Listni zavrtači Slovenije. XVI (The leaf miners of Slovenia XVI).- Zbornik Biotehniške fakultete, Kmetijstvo, 47, Ljubljana, pp. 101 - 108.
MAČEK, J., 1988, Listni zavrtači Slovenije. XVIII (The leaf miners of Slovenia XVIII).- Zbornik Biotehniške fakultete, Kmetijstvo, 51, Ljubljana, pp. 263 - 270.
MAČEK, J., 1991, Listni zavrtači Slovenije. XXI (The leaf miners of Slovenia XXI).- Zbornik Biotehniške fakultete, Kmetijstvo, 57, Ljubljana, pp. 187 - 193.
MAČEK, J., 1996, Hyponomological fauna of Slovenia. XXV Research Rep. Biotech. Fac., Agriculture, 67, Ljubljana, pp. 121 - 133.
MATVEJEV, D. S., 1991, Naravni tipi predelov Slovenije in njihovo varstvo.- ZRSVNKD, Ljubljana, pp. 48.
MEINEKE, T., 1995, Nachfalter in der naturschutzrelevanten Raumplanung: Grundlagen, Methoden, Auswertung.- Schr.-R. f. Landschaftspfl. u. Natursch., 43, pp. 79 - 106.
STATISTIČNI PODATKI po občinah Republike Slovenije, Kmetijstvo 1987-1991.- Zavod Republike Slovenije za statistiko, Ljubljana, 1992, 3: pp. 137.
STEPANČIČ, D., 1984, Osnovna pedološka karta SFRJ, Pedološka karta Slovenije, komentar k listu Murska Sobota.- BF, VTOZD za agronomijo, Ljubljana, pp. 64.
TOLMAN, T. & LEWINGTON, R., 1997, Butterflies of Britain & Europe.- Harper Collins Publischers, pp. 320.
WRABER, M., 1959, Fitocenološka opredelitev Žitkovskega, Kobiljanskega, Bukovniškega in Rediškega gozda v Prekmurju.- Rokopisni elaborat za Koroško gozdarsko podjetje Slovenj Gradec.
WRABER, M., 1964, Gozdno vegetacijske enote in rastiščno gojitveni tipi na Goričkem in v Prekmurju.- Rokopisni elaborat za Kombinat Pomurka, Murska Sobota.
WRABER, M., 1968, Gozdna vegetacija Ginjevca, Hraščice in Orlovščka v Pomurju.- Rokopisni elaborat za Obrat za gozdno in lesno predelavo pri Kmetijsko-industrijskem kombinatu Pomurka, Murska Sobota.
WRABER, M., 1969, Die bodensauren Föhrenwälder des slowenischen pannonischen Randgebietes.- Acta botanica Croatica, Zagreb, 28.
WRABER, M., 1969, Über Verbreitung, Ökologie und systematische Gliederung der Eichen-Hainbuchwälder in Slowenien.- Feddes Repertorium, Berlin, 79.
ZUPANČIČ, M., PUNCER, I., MARINČEK, L. 1978, Manuskripta potencialne vegetacije Slovenije.- Arhiv Biološkega inštituta ZRS SAZU, Ljubljana.

Fig. 1 - Border of the area under investigation.

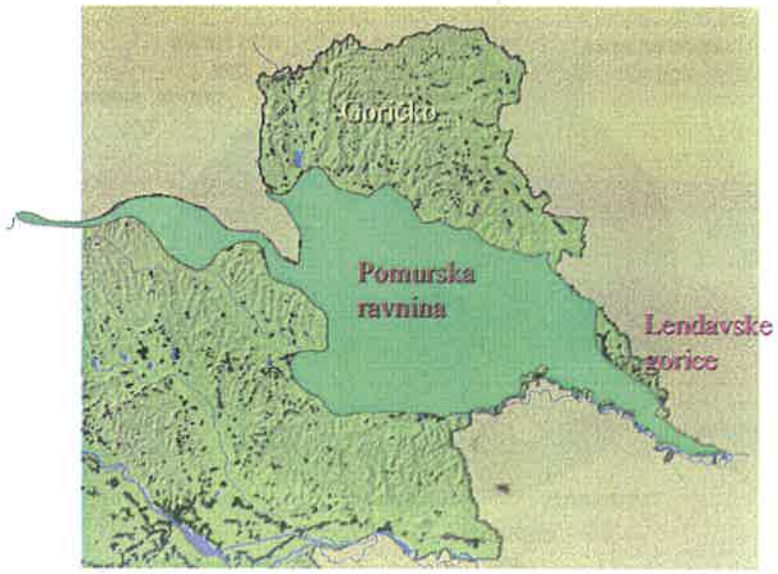
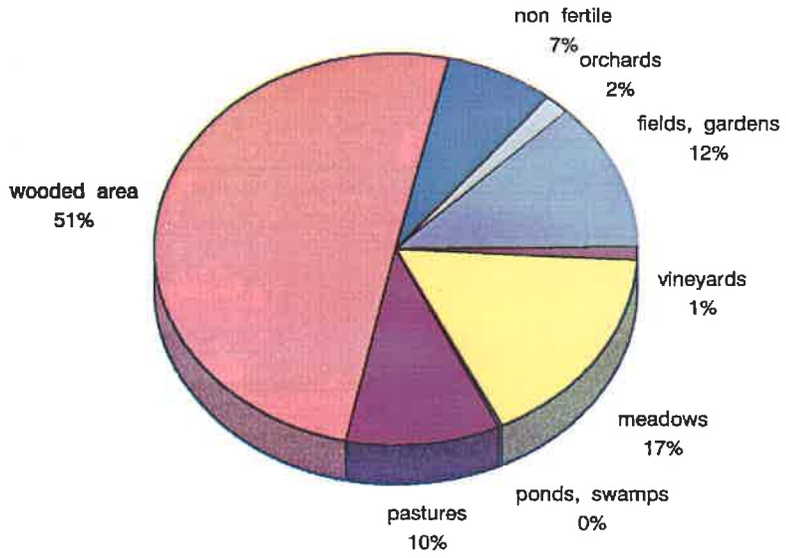
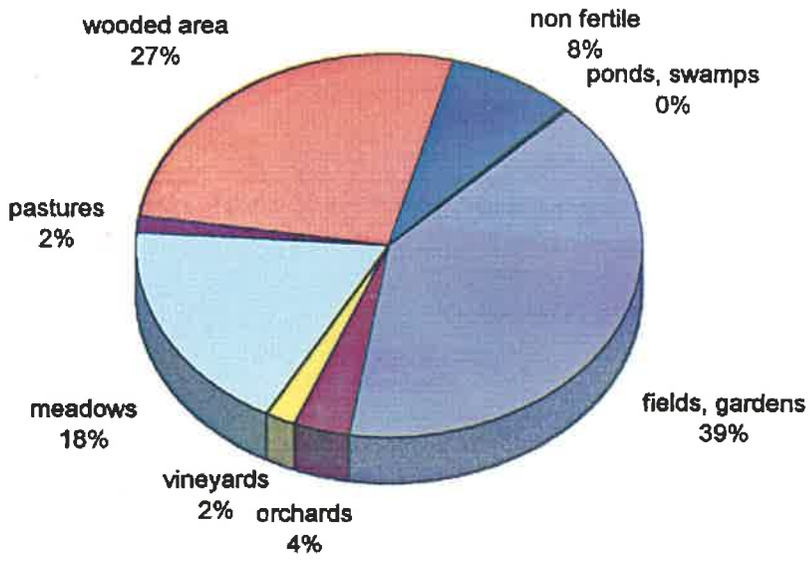


Fig. 2 - Zoogeographical characteristics of the region.



Graph 1 - Land structure in Slovenia (Statistični podatki 1992)



Graph 2 - Land structure in Prekmurje (Statistični podatki 1992)

Entomol. Croat. (1998) 1999. Vol. 4. Num. 1 - 2.: 29 - 55.
GOMBOC, S.: Preliminary results of lepidoptera fauna investigation in Prekmurje ...

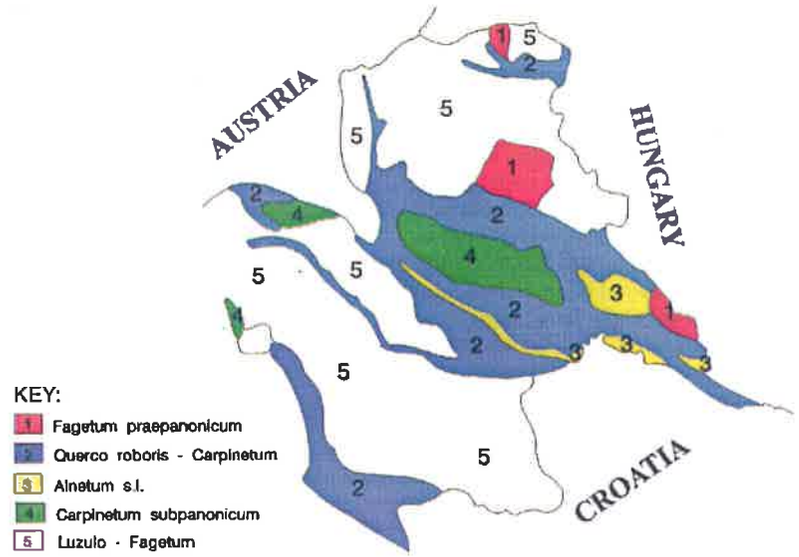


Fig. 3 - Potential vegetation of the area under investigation.

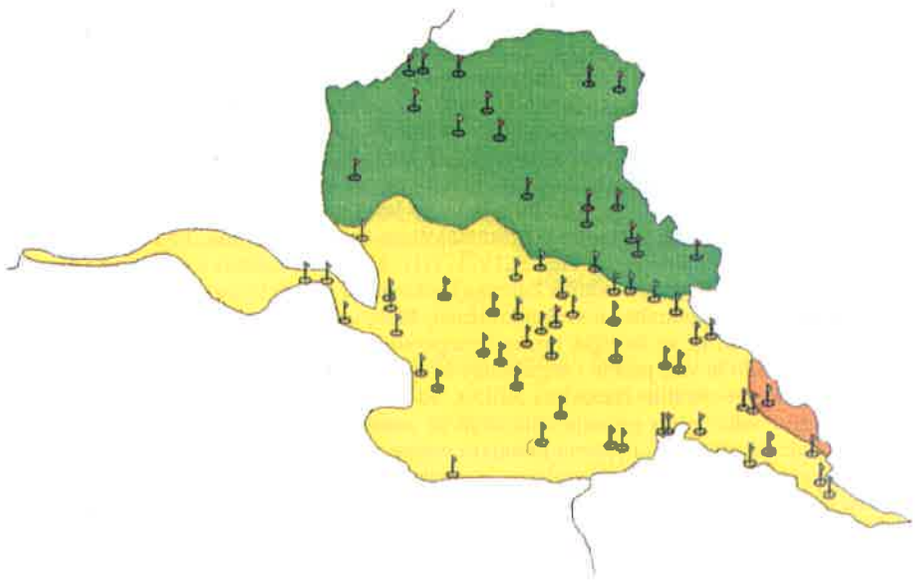


Fig. 4 - Distribution of the localities in the area under investigation.