Харків : Вид-во „Штрих”, 2000. – 161 с.

9. Вовк В.І. Сертифікація органічного сільського господарства в Україні: сучасний стан, перспективи, стратегія на майбутнє / В.І. Вовк // Матеріали Міжнародного семінару „Органічні продукти харчування. Сучасні тенденції виробництва і маркетингу”. – Львів, 2004. – С. 3-7.

Мойш Н.И. **Органическое земледелие: сущность и условия его эффективного применения**

В статье освещено роль и место органического земледелия в контексте антропогенных и климатических изменений. Раскрыты экологические, социальные и экономические преимущества внедрения органического земледелия.

Ключевые слова: органическое земледелие, сельское хозяйство, аграрное производство, технологи.

Moish N.I. **Organic farming: the nature and conditions of its effective application**

The article highlights the role and place of organic farming in the context of anthropogenic and climate change. Environmental, social and economic advantages of the introduction of organic farming have been disclosed.

Keywords: organic farming, agriculture, agricultural production, technology.

УДК 630*17:582.632.2+502.743:595.78 (477.87)

IMPORTANCE OF RELICT OAK WOODS OF THE TISZA PLAIN (TRANSCARPATHIA, UKRAINE) AS NEW BUTTERFLY REFUGIUM

S. Popov[1], A. Mihaly[2]

[1-] *ALEXANOR, Company for Science Implementation, Uzhgorod*

[2-] *Forestry Department, Uzhgorod State University, Uzhgorod, e-mail: mihaly@ua.fm*

The Tisza Plain in Transcarpathia was historically completely covered with forest, mainly by damp oak woodland. Today, more than 90% of its area has been converted to human use. In this connection, the preservation of remnants of natural biotopes is important, because rare and disappearing plants and butterflies still survive here today. Place Chere is one of the most natural and unique protected area remaining on the Tisza Plain. Since 1985 65 butterfly species have been recorded. Amongst these, Lycaena helle D. & S., Maculinea teleius Brgstr., Maculinea arion L., Erebia medusa D. & S., Glaucopsyche alexis Poda inhabit marshes and

meadows. At the present time their European threat status in is Vulnerable. Their populations are small and continue to decline through draining of forest meadows and marshes and their subsequent change to scrub dominated by bushes of Salix, Spiraea and Rubus. A concrete management programme for the surviving butterflies is needed here.

Introduction. As a result of field work in the Transcarpathian territory, carried out in 1987 - 1998 as part of a long term Monitoring Project, we have received some important data about butterflies and plants species, their quantity and ecological peculiarities. Of particular importance for butterfly conservation is that there exist here remnants of wet oak woods with glades and peat bogs in which their larval food plants grow. The main management requirement controlling their survival is regulation of the ground water regime. An investigation has been carried out for the first time in the Ukraine in 1997 and 1998 using the monitoring scheme developed in Britain (Butterfly Monitoring Scheme, 1981).

Overview. We have visited Chere many times in both years. Not every visit was suitable for recording all of species because of weather conditions, but most sunny days. Altogether 6857 specimens of 65 butterfly species for 61 recording times and 39,23 recording hours were recorded. The most numerous species was *Hyponephele jurtina* (1265 calculated specimens) and also *Artogeia napi, Plebejus argus, Coenonympha pamphilus, Neptis rivularis***.** Such species as *Coenonympha glycerion, Boloria selene, Polyommatus icarus, Brenthis ino, Gonepteryx rhamni, Ochlodes venatus, Thymelicus sylvestris, Maculinea teleius, Melitaea athalia, Pieris brassicae, Boloria dia, Lycaena phlaeas, Lycaeides argyrognomon, Lycaena helle, Leptidea sinapis, Pyrgus malvae, Artogeia rapae, Papilio machaon, Erynnis tages, Araschnia levana, Glaucopsyche alexis* were also common species. Populations of rare species are of greater interest. These include the marsh butterflies *Boloria eunomia, Lycaena helle, Maculinea teleius* and such meadow species as *Maculinea arion, Erebia medusa, Glaucopsyche alexis***.** The first two species are trophically connected with this unique area of vegetation and their preservation is dependant on the continued well-being of these biotopes.

Many relict, rare and endemic plants still occur here in the grassland: *Crocus heuffelianus Herb., C. banaticus L., Erythronium dens-canis L., Narcissus stellaris Haw., Muscari trannsylvanicus Schur., Ferulago sylvatica L., Orchis maculata L.* Further typical marsh plants, which have partially or completely disappeared today, include: *Sphagnum* (6 species), *Polytrichum* (3 species), *Comarum palustre L.***,** *Eriophorum vaginatum L., Viola uliginosa L., Thelipteris palustris Schott. et all*. Such mountain plants as *Vaccinium myrtillus L., V. vitis-idaea L., Hieracium aurantiacum L., Doronicum austriacum Jackq., Dryopteris cristatus (L.) A. Gray. et al.* have all found a refuge here during periods of glacial transgressions. Some other rare plants have now vanished: *Gladiolus palustris Gaudin, G. imbricatus L., Iris sibirica L***.** A few early-flowering marsh plants have apparently disappeared and

their present status is unknown. Such plants as *Narcissus stellaris Haw.* and *Muscari trannsylvanicus Schur.* have probably disappeared.

***Climatic conditions of Chere*.** Chere is located in an area of wet mild climate. Average Temperatures are -4,2°C in January and 20°C in July. The period with air temperature more than 10°C lasts 180 days. Annual precipitation is 900 mm. Maximum precipitation occurs in June and July.

Transects results. Chere comprises one of the most interesting and unique areas of the Tisza Plain with an important nature conservation role. It consists of Dubrovy site (10 hectare) and Mocsarka site (8 hectare), divided into two parts, and connected by a field, allowing for migration of flora and fauna.

Transect (site) Mochrka 22°30'E 48°04'N (Photos 1, 2)

Photos 1, 2 by S.G. Popov

First walked: **1987** ***Recorder:*** **S. Popov.**

Sections number: 13 (650 m. length), divided on sections in 1997

Ecological state today: The wet oak woods formed in place of peat bogs after the Ice Age. Now, this site consists of relict light oak wood (approximately 200 years old). Today it is under strong anthropogenic pressure. Over the past 60 years drainage has been carried out, so that we now have a dry oak wood. The open marsh areas have been nearly completely replaced with agricultural holdings, and the damp meadows are used for haymaking and pasturage. Some damage of young oak trees, grassland, bog moss (*Sphagnum*) and soil structure was noticed.

The table 1 gives numbers of butterflies counted here on each of the weekly transect walks. Quantity is shown as total for 1987, 1989, 1991-1993, 1995, 1997 and 1998 years.

Table 1

Numbers of butterflies counted here on each of the weekly transect walks

	Weeks																					
GENUS / SPECIES	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Argynnis adippe									9													
Heodes alciphron							1															
Glaucopsyche alexis							15	27														
Pyrgus alveus																	1					
Everes argiades			2													3						

Celastrina argiolus	2		1	1			1			2	4												
Plebejus argus					1	*84,5*	168	129	88	4	78					89	61	6					
Lycaeides argyrognomon							48	15			6						4						
Maculinea arion							3	2	1														
Pyrgus armoricanus				2	7	6	5	10															
Vanessa atalanta											3												
Melitaea athalia					6	*10*	14	1	1	*5,5*	10						2						
Pieris brassicae						1	3	3	3	4	6					1							
Anthocaris cardamines				5	10	*5,5*	1																
Vanessa cardui					1	3	5				1					2							
Hesperia comma																5		9					
Aporia crataegi							1	1	1														
Colias crocea																							1
Brenthis daphne									8	5	2												
Pontia daplidice									2	2	2					16	15						
Boloria dia				15					1	9	40						18						
Lycaena dispar																3	1						
Boloria eunomia							9																
Melanargia galathea											5												
Coenonympha glycerion							140	41	*22*	3	32						64	12					
Lycaena helle			13	*12,5*	12	9	6	2	2	10	8					3							
Colias hyale				6	10						12												2
Polyommatus icarus							24	3	15	*12,5*	10					18	29	10					3
Lycaeides idas							15	11			3												
Strymon ilicis									1	1													
Brenthis ino									66	*58*	50												
Inachis io	4	7	10	1							1						13						
Hyponephele jurtina							68	*51*	34	58	275			17	*24,5*	32	49	50			19	2	
Issoria lathonia			1	1	1				4	5	8							1					
Thymelicus lineola											12						1						
Papilio machaon	1	*1,5*	*2*	12	5	3	1	1			6						6	2					
Pyrgus malvae				3	16	1	19	15															
Erebia medusa							11	1	1														
Artogeia napi	15	*22,5*	40	3	15	1	94	10	38	9	112					72	42	16			10	10	
Argynnis niobe									7	12	17												
Coenonympha pamphilus					44	*108*	172	29	90	33	95						38	16			43	15	

Lycaena phlaeas			4	7	3	2,5	2	4	6	8	5						16	22			4	3
Melitaea phoebe					3				2								13					
Iphiclides podalirius				7	1																	
Nymphalis polychloros											1											
Strymonidia pruni											2											
Artogeia rapae									1	13	25					27	*15,5*	4				
Gonepteryx rhamni	9	*14*	19	18	21	19	17	5	*3,5*	2	25											
Neptis rivularis							36	134	58	13	30					2	1					
Callophrys rubi					3	11	19	3	*2,5*	2												
Boloria selene					16	29	42	7	3	1	1					2	2	2				
Leptidea sinapis	3	*2,5*	2	4	9	*5,5*	2			7	20											
Thymelicus sylvestris									11	9	45			4	3	2	2					
Erynnis tages			4	3	9			3									4					
Maculinea teleius											22					38	25					
Lycaena tityrus							9															
Ochlodes venatus			1		4	*11,5*	19	10	6	11	20											

Transect (site) Dubrovy 22°30'E 48°04'N (Photo 3)

Photo by S.G. Popov

First walked: **1997** ***Recorder:*** **S. Popov.**

Sections number: 13 (650 m. length), divided on sections in 1997

Ecological state today: Young oak forest (55 years old). The stability of this site depends on traditional management and maintenance of ground water levels. Here are haymaking glades and appropriate forestry. But recently some wastes that have polluted the soil have been noticed.

The table 2 gives numbers of butterflies counted here on each of the weekly transect walks. Quantity is shown as total for 1997 and 1998 years.

Table 2

Numbers of butterflies counted here on each of the weekly transect walks

GENUS / SPECIES	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Nordmannia acaciae												1								
Fabriciana adippe																		1		
Pararge aegeria	4											2						1	2	5
Glaucopsyche alexis					1															
Everes argiades	4													2				2		
Celastrina argiolus					12				8											
Plebejus argus					17	*13,5*	10	*8*	5					12	17	8	*5*	2		
Lucaeides argyrognomon				2											4					
Maculinea arion							3	1	4											
Vanessa atalanta									2											5
Mellicta athalia				3	12	*8*	4	4	8						5	14	*10,5*	7	3	5
Pieris brassicae				3	7			2	48					6	1					
Polygonia c-album					2				2			2								
Anthocharis cardamines	8				3															
Cynthia cardui					7				2											1
Hesperia comma																4	*4*	4	*4*	4
Aporia crataegi							4													
Brenthis daphne					8				12											
Pontia daplidice									1							1				
Clossiana dia	2											1								
Melanargia galathea									2			2								
Coenonympha glycerion					9											8	*6,5*	5		
Lycaena helle	9				15	*8,5*	2							4						
Colias hyale									13									3		
Aphantopus hyperantus												18								
Polyommatus icarus					8	*5*	2	*4*	5					3	5	3	*3*	3	5	4
Nordmannia ilicis									2											
Brenthis ino					3				21											
Inachis io								2				1						1	2	1
Maniola jurtina					139			3	218			50	*82,5*	115	50	66	*36,5*	7	*10*	13
Issoria lathonia									3					1						
Araschnia levana	21				12				10							2	*1,5*	1		
Hamearis lucina	4								2											
Papilio machaon	10				2				2											
Lasiommata maera																2				
Pyrgus malvae	2	*1,5*	1	3	3	*2,5*	2													

Erebia medusa			1	*4*	7														
Pieris napi	59	*31,5*	2	7	130	*66*	2	17	115			7	*49,5*	92	23	47	*35*	23	14	27
Coenonympha pamphilus					21	*18*	15	14	10						2			14	*8,5*	3
Argynnis paphia					4											4				
Lycaena phlaeas					1											1				
Melitaea phoebe					2															
Iphiclides podalirius									1					1						
Pieris rapae																				
Gonepteryx rhamni	4																	3		
Neptis rivularis					38	*20*	2	25	92						2	6				
Clossiana selene			5	*17*	29	*19,5*	10	2	21					9	16	16	*8,5*	1		
Leptidea sinapis	12				8							3	*3*	3	2					
Thymelicus sylvestris					7				17			7			2					
Erynnis tages	8								10			3	*4*	5						
Maculinea teleius									8					6	6					
Heodes tityrus					3															
Ochlodes venatus					12		2	2	16					7	3					2

Year indices of species. And here annual totals of each species at Chere are shown.

Table 3

Annual totals of each species at Chere are shown

Species\Year	1987	1989	1991	1992	1993	1995	1997	1998
H. jurtina	23	29	0	49	91	0	321	658
Art. napi	11	69	3	34	60	32	211	602
Pl. argus	1	1	0	50	202	5	126	236
C. pamphilus	10	5	10	62	98	0	216	83
N. rivularis	2	1	0	19	196	0	107	110
C. glycerion	16	0	25	61	16	0	109	14
B. selene	1	0	1	12	8	0	75	55
P. icarus	7	0	0	43	16	18	28	34
Br. ino	0	8	0	0	108	0	18	6
G. rhamni	0	9	5	15	32	0	6	49
Ochl. venatus	0	5	10	15	11	0	8	50
Th. sylvestris	10	15	0	0	22	0	34	16
M. teleius	0	0	0	25	0	0	6	74
M. athalia	0	0	1	2	11	0	41	30
P. brassicae	5	0	3	3	3	0	6	65
B. dia	0	5	0	18	51	0	1	2
L. hlaeas	1	1	0	0	14	0	51	10
L. argyrognomon	0	1	0	17	20	0	8	3
L. helle	0	0	0	0	2	0	12	51
L. sinapis	0	3	0	0	22	0	5	29
P. malvae	0	0	15	13	3	0	7	9

Art. rapae	0	0	0	0	22	27	7	4
P. machaon	0	1	1	7	18	0	2	17
Er. tages	0	0	3	4	3	0	3	27
Ar. levana	0	0	0	0	0	0	3	45
Gl. alexis	0	0	8	15	19	0	0	1
P. daplidice	0	0	0	15	2	16	3	1
C. hyale	5	0	0	0	6	0	4	12
In. io	0	4	0	0	1	0	18	13
C. argiolus	0	0	2	0	5	0	1	21
Br. daphne	0	0	0	0	10	0	5	15
L. idas	0	0	0	0	14	0	0	0
M. phoebe	0	0	0	13	2	0	2	0
Ant. cardamines	0	0	0	0	5	0	1	10
C. rubi	0	0	2	19	1	0	0	0
H. comma	0	0	0	0	0	0	17	9
Iss. lathonia	0	0	0	0	11	0	3	6
Arg. niobe	0	0	0	0	24	0	0	0
E. medusa	0	0	1	1	0	0	2	17
P. armoricanus	0	0	0	0	7	0	0	2
V. cardui	0	0	0	0	0	2	0	16
A. hyparantus	0	0	0	0	0	0	10	0
Ev. argiades	0	0	0	0	0	3	2	8
Th. lineola	0	0	0	1	12	0	0	0
P. aegeria	0	0	0	0	0	0	3	11
M. arion	0	0	0	0	0	0	5	4
L. tityrus	0	0	0	7	0	0	2	2
Arg. adippe	0	0	0	0	9	0	1	0
V. atalanta	0	1	0	0	0	0	0	9
Iph. podalirius	0	0	0	0	7	0	0	2
B. eunomia	0	0	0	9	0	0	0	0
M. galathea	0	0	0	0	5	0	4	0
Arg. paphia	0	0	0	0	0	0	4	8
P. c-album	0	0	0	0	0	0	2	4
A. crataegi	0	0	0	0	0	0	5	0
H. lucina	0	0	0	0	0	0	0	6
L. dispar	0	0	0	0	0	0	1	3
Str. ilicis	0	0	0	0	1	0	0	2
L. maera	0	0	0	0	0	0	2	0
Str. pruni	0	0	0	0	0	0	2	0
N. acaciae	0	0	0	0	0	0	1	0
H. alciphron	0	0	0	0	0	0	0	1
P. alveus	0	0	0	1	0	0	0	0
C. crocea	0	0	0	0	0	0	0	1
N. polychloros	0	0	0	0	0	0	0	1

Determination of status of butterfly species. Abundance and dominance indices for each species are determined using the method of Kuzyakin & Mazin (1993). All adults recorded on transect are counted over the course of an hour This represents a measure of abundance. Abundance of individual species was estimated by a number scale, in which each number is given a number and special name (grade): abundant species (xxx) - from 10 to 99 occurrences per hour, common species (xx) - from 1 to 9 occurrences, rare species (x) - from 0,1 to 0,9 occurrences, very rare species (x) - from 0,01 to 0,09 occurrences. Abundant species together with the common ones are called background species. The dominance index for a species is given as the percentage of all occurrences of all species.

Table 4

Checklist of butterfly species recorded at Chere

GENUS	SPECIES	QUANTITY	ABUNDANCE	GRADE	DOMINATING INDEX (%)
		TOTAL 6857	174,66		
Hyponephele	*jurtina*	1265	32,24	xxx	18,45
Artogeia	*napi*	1052	26,82	xxx	15,34
Plebejus	*argus*	696	17,74	xxx	10,15
Coenonympha	*pamphilus*	662	16,87	xxx	9,65
Neptis	*rivularis*	439	11,19	xxx	6,4
Coenonympha	*glycerion*	314	8	xx	4,58
Boloria	*selene*	183	4,66	xx	2,67
Polyommatus	*icarus*	150	3,82	xx	2,19
Brenthis	*ino*	140	3,57	xx	2,04
Gonepteryx	*rhamni*	138	3,52	xx	2,01
Ochlodes	*venatus*	115	2,93	xx	1,68
Thymelicus	*sylvestris*	106	2,7	xx	1,54
Maculinea	*teleius*	105	2,68	xx	1,53
Melitaea	*athalia*	99	2,52	xx	1,44
Pieris	*brassicae*	88	2,24	xx	1,28
Boloria	*dia*	86	2,19	xx	1,25
Lycaena	*phlaeas*	80	2,04	xx	1,17
Lycaeides	*argyrognomon*	79	2,01	xx	1,15
Lycaena	*helle*	78	1,99	xx	1,14
Leptidea	*sinapis*	75	1,91	xx	1,09
Pyrgus	*malvae*	65	1,66	xx	0,94
Artogeia	*rapae*	64	1,63	xx	0,93
Papilio	*machaon*	51	1,3	xx	0,74
Erynnis	*tages*	49	1,25	xx	0,71
Araschnia	*levana*	48	1,22	xx	0,7
Glaucopsyche	*alexis*	43	1,1	xx	0,63
Pontia	*daplidice*	37	0,94	x	0,54
Colias	*hyale*	36	0,92	x	0,52
Inachis	*io*	36	0,92	x	0,52

Celastrina	*argiolus*	31	0,79	x	0,45
Brenthis	*daphne*	30	0,76	x	0,44
Lycaeides	*idas*	29	0,74	x	0,42
Melitaea	*phoebe*	28	0,71	x	0,41
Anthocaris	*cardamines*	27	0,69	x	0,39
Callophrys	*rubi*	27	0,69	x	0,39
Hesperia	*comma*	26	0,66	x	0,38
Issoria	*lathonia*	26	0,66	x	0,38
Argynnis	*niobe*	24	0,61	x	0,35
Erebia	*medusa*	21	0,53	x	0,31
Pyrgus	*armoricanus*	19	0,48	x	0,27
Vanessa	*cardui*	19	0,48	x	0,28
Aphantopus	*hyperantus*	18	0,46	x	0,26
Everes	*argiades*	13	0,33	x	0,19
Thymelicus	*lineola*	13	0,33	x	0,19
Pararge	*aegeria*	12	0,3	x	0,17
Maculinea	*arion*	12	0,3	x	0,17
Lycaena	*Tityrus*	12	0,3	x	0,17
Argynnis	*Adippe*	10	0,25	x	0,14
Vanessa	*Atalanta*	10	0,25	x	0,14
Iphiclides	*Podalirius*	10	0,25	x	0,14
Boloria	*Eunomia*	9	0,23	x	0,13
Melanargia	*Galathea*	9	0,23	x	0,13
Argynnis	*Paphia*	8	0,2	x	0,12
Polygonia	*c-album*	6	0,15	x	0,09
Aporia	*Crataegi*	6	0,15	x	0,09
Hamearis	*Lucina*	6	0,15	x	0,09
Lycaena	*Dispar*	4	0,1	x	0,06
Strymon	*Ilicis*	4	0,1	x	0,06
Lasiommata	*Maera*	2	0,05	x	0,03
Strymonidia	*Pruni*	2	0,05	x	0,03
Nordmannia	*Acaciae*	1	0,02	x	0,01
Heodes	*Alciphron*	1	0,02	x	0,01
Pyrgus	*Alveus*	1	0,02	x	0,01
Colias	*Crocea*	1	0,02	x	0,01
Nymphalis	*Polychloros*	1	0,02	x	0,01
	TOTAL	6857	174,66		100

Conclusion. The current status of both sites at Chere can only be described as catastrophic. In 60 years the amelioration (drainage) carried out here, has led to the development of a dry oak wood. The open marsh areas have been nearly completely replaced with agricultural holdings, and the damp meadows are used for haymaking and pasturage. Because of these pressures the overall area of natural vegetation has been reduced more than 90% ! There is a need for the involvement of experts and the public to ensure the prevention of the complete destruction of the remaining relict oak wood.

Toward this end, it will be necessary to in-fill drainage channels and "to turn water back", to return the water regime to that which existed pre-drainage. On meadow sites it will be beneficial to develop and to introduce special regimes of grass mowing and cattle feeding to support populations of threatened plants and animals. In oak wood fragmented by cabins a suite of low quality plant species now dominates. It displaces the populations of threatened plants, and therefore needs to be cleared . The restoration of populations of extinct plants is feasible. And, finally, it is necessary to organise biological monitoring to record major parameters of populations of threatened plants and animals (area, abundance and age content of populations, level of reproduction, metapopulation dynamics).

In total, under the preliminary data here 7 species of plants found here are included in the Red book of Ukraine (1996) today. 11 species are included in the regional Red list (Kricsfalusi, etc., 1998).

In this area the restoration of several butterfly species protected in Europe is possible: *Colias palaeno L., Coenonympha tullia Mull., Boloria aquilonaris Stich., Maculinea alcon L., Maculinea nausithous Brgstr*. The populations of two *Maculinea* species have already nearly disappeared from the territory of Transcarpathia, and others are confined to single localities. Therefore restoration of these species is of significant scientific and nature conservation interest. In total in the territory, planned reserves are inhabited by 4 butterfly species with threatened status in Europe (Popov in van Swaay, Warren, 1998).

Planned measures. In consideration of the important role of Chere for preservation of relict landscape features and biological diversity, not only in the Tisza Plane lowlands, but also in Transcarpathia in general, a range of organizational and scientific measures needs to be realised, primarily:

- revitalization of marsh and hydrophilic biotopes;
- restoration of threatened plants and butterflies;
- management of threatened plants and butterflies;
- biological monitoring of threatened plants and butterflies;
- raising of a level of ecological education of the local population (carrying out lectures, issuing brochures).

1. Butterfly monitoring scheme. Instructions for independent recorders. Institute of Terrestrial Ecology. A National Environment Research Council laboratory. NERC Reprographic Section. Swindon. 1981, 14 p.

2. Kuzyakin A.P. Route Method of Imago Butterfly Calculation by Method of Catching For a Unit of Time. / A.P. Kuzyaklin, L. N. Mazin // A. P. Kuzyakin Memoramble Reading. "Influence of Anthropogenic Factors on Structure and Function of Ecosystems and Their Particular Components". N.K. Krupskaya Moscow Pedagogical Institute, Moscow, 1993, p. 61-66.

Попов С., Мигаль А.В. **Важливість реліктових дубових лісів рівнини Тиси (Закарпаття, Україна) в якості нового рефугіуму метеликів**

Більш ніж 90 % площі території долини р. Тиси (у минулому повністю вкритої лісами, переважно дубовими) на сьогоднішній день зазнала змін внаслідок антропогенної діяльності. У зв'язку з цим, важливим є збереження залишків природних біотопів, котрі є осередками існування зникаючих видів рослин та комах, зокрема денних метеликів. Урочище „Чере" (інша назва: „Дуброви" та „Мочарка") є найбільш природним і унікальним природоохоронним об'єктом Притисянської рівнини. З 1985 року тут зафіксовано 65 видів метеликів. З цієї групи болота і луки заселяють *Lycaena helle D. & S., Maculinea teleius Brgstr., Maculinea arion L., Erebia medusa D. & S., Glaucopsyche alexis Poda*. На сьогодні у розрізі Європейської созологічної категоризації вони мають статус „Загрозливий" (Vulnerable). Популяції цих видів невеликі, і їх розміри продовжують зменшуватися внаслідок осушення лісових лук і боліт та пов'язаним з цим процесом розвитком чагарникової рослинності, сформованої переважно *Salix, Spiraea* та *Rubus*. Необхідним є запровадження конкретної програми менеджменту для забезпечення умов існування збережених видів представників метеликів.

УДК 581.584.3:631

ФІТОЦЕНОЛОГІЧНІ ДОСЛІДЖЕННЯ ПОЛОНИНИ РУНОЇ КАРПАТ В УМОВАХ АНТРОПОГЕННОЇ ТРАНСФОРМАЦІЇ

І.Ю. Фекета

ДВНЗ «Ужгородський національний університет», кафедра фізичної географії та раціонального природокористування, м. Ужгород, e-mail: feketa@mail.ru

Наведено фітоценологічну характеристику рослинності Полонини Руна в Карпатах за впливу антропогенних факторів, зокрема витоптування, викопування та пошкодження надземних органів рослин.

Ключові слова: *фітоценологія, антропогенний вплив, трансформація, флора, формації.*

Інтенсивна господарська діяльність людини, призвела до зменшення чисельності або зникнення багатьох природних видів рослин. Особливо вразлива до антропогенного впливу рослинність високогір'я і полонин Українських Карпат, наслідки якого довготривалі та загрозливі. Останнім часом у високогірних районах Карпат збільшилась кількість