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## EPIGEIC BEETLES (*COLEOPTERA*) OF THE HILL VÝHON AT ŽIDLOCHOVICE

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### ABSTRACT

In presented work we have focused on biodiversity of epigeic beetles of the hill Výhon at Židlochovice. This location is one of the northernmost outpost (historical and contemporary) of Pannonian biogeographical region, while many species of invertebrates. Although, we are missing a species list of this remarkable locality. The whole Výhon hill was historically a system of small fields, grassland patches, vineyards and orchards, and it is now a Natural Park with an area of 1700 ha, occupying the entire massif Výhon. Current conditions include mostly arable land, growths of non-native trees (*Robinia pseudacia*, *Ailanthus altissimus*) and vineyards. The whole hill was terraced for the cultivation of wine, fruit trees and generally arable during end of last century. These terraces are the only refuge for steppe fauna, except Natural Monument (NM) Nové Hory in the Nature Park Výhon. The steppe grasslands do not find elsewhere (except NM Nové Hory) than on the faces of these terraces. We chose this faces of terraces in various stages of succession for investigation of epigeic beetle fauna. We used pitfall traps, always in line of three traps of the hillside terraces. Determination currently underway, but so were frequently detected very important species of our steppe fauna: *Sisyphus schaefferi*, *Dorcadion pedestre*, *Calosoma auropunctaum*, *Licinus cassideus*, *Brachinus crepitans* and *Brachinus explodens*. All of these species are important from the rareness point of view. Majority of them are protected by Czech law (as threatened) and some of them are listed under Red List of invertebrates of the Czech Republic. The most widespread species were ground beetles of the genus *Harpalus*, which occurred at all localities. At each locality, found at least 5 species and at most 8 species of this genus. The largest proportion possessed genus *Brachinus*. Found populations there species are large enough to deserve targeted management.

**Key words:** biodiversity, invertebrates, terraces, epigeic beetles

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## INTRODUCTION

The countryside of south Moravia is characteristic due agricultural intensification followed by loosing of open xerothermic and light forest. Almost all these xeric habitats were terraced for agricultural production (for wine and fruit trees mainly) in the second half of 20<sup>th</sup> century. At that time it was really negative and sizable transformation of ecosystem and landscape character. It is indisputable, that not only invertebrate fauna changed with the changes of ecosystem and landscape character. Nowadays the value of Výhon hill is in character of this landscape, because a lot of smaller mosaic patches, which guarantee landscape heterogeneity. This heterogeneity is also product of human activities and land use in landscape. Though, landscape character was not disturbed essentially. Výhon hill has historical, geological and paleontological importance. This locality is one of the northernmost refuges for many invertebrate species of pannonian biogeographical area. It was the reason of Výhon hill declaration as Nature Park Výhon hill was terraced from south, east and west. Landscape mosaic consist of vineyards, intensive and extensive fruit orchards, small fields and gardens, we can find there also steppe habitats. Problematic is the occurrence of invasive *Robinia pseudoacacia*, which spreads very quickly (Brychta, 2013). My study is focused on epigeic beetles of area mentioned above. Some important invertebrate species were found here, for example hemiptera (Malenovský et al., 2011) or groundbeetles (Veselý et al. 2009).

## MATERIAL AND METHODS

### Experimental localities

Research was conducted on four localities of the Výhon hill in faunistic square 6965 (P. There are three localities near the top of hill and one locality was near Nosislav village. Experimental localities and their basic characteristic:

Rozhledna – locality is characterized by arable land, vine was never grow on this locality (fig. 1)

Vyšavy – vineyard with a long vine planting tradition, in integrated system of planting (fig. 2)

Afaberky – arable land, in the past, there were vineyards (fig. 3)

Nosislav – abandoned arable land, southernmost slopes of Výhon hill (fig. 4)

### Collecting and important species interpretation

Pitfall traps were used as collecting method. Pitfall traps are suitable for epigeic invertebrate fauna collecting, their main advantage is that pitfall traps do not work with a mistake of collector (Skuhravý, 1969). It was used pitfall traps, which are presented in Winkler, 1974, covered with wood cover. There were used as a fixative fluid 4% formaldehyde solution to each of trap. There were installed 3 lines (each line with 3 pitfall traps) at each locality during vegetation season (from April to September). Biological material was collected each month. Collected material was conserved in 70% ethanol, than particularly groups of invertebrates were separated. Epigeic colleoptera were determined, the rest of biological material was sent to determination to other experts.

## RESULT AND DISCUSSION

Currently, collected material is determined. First results show important steppe species of our fauna such as *Sisypus schaefferi* (Linnaeus, 1758) and *Dorcadion pedestre* (Poda, 1761). *S. schaefferi* is under low protection (Decree 395/1992Sb. according to 176/2006Sb.) and it is also listed in Red list of invertebrates in Czech Republic (Farkač et al., 2005) as vulnerable species. There was found also *Calosoma auropunctum* (Herbst, 1784), also very important “Red list”

## MENDELNET 2013

species listed under vulnerable category, then also “Red list” species *Licinus cassideus* (Fabricius, 1792) listed under endangered category. It is necessary to mention also *Brachinus crepitans* (Linnaeus, 1758) and *Brachinus explodens* Duftschmidt, 1812, which are both listed under low mentioned above.

Tab. 1

Locality		Rozhledna		
		9.5.2013	7.6.2013	28.6.2013
<i>Amara</i>	<i>aenea</i>	1		
<i>Amara</i>	<i>ovata</i>		2	1
<i>Anchomenus</i>	<i>dorsalis</i>		3	2
<i>Brachinus</i>	<i>crepitans</i>	44	42	165
<i>Brachinus</i>	<i>explodens</i>	4	3	42
<i>Harpalus</i>	<i>caspius roubali</i>	4	7	2
<i>Harpalus</i>	<i>serripes</i>			1
<i>Harpalus</i>	<i>signaticornis</i>	1		
<i>Harpalus</i>	<i>tardus</i>	1		1
<i>Microlestes</i>	<i>maurus</i>	1	3	14
<i>Microlestes</i>	<i>minutulus</i>			1
<i>Ophonus</i>	<i>azureus</i>	1	2	6
<i>Ophonus</i>	<i>puncticeps</i>		1	1
<i>Poecilus</i>	<i>cupreus</i>		1	
<i>Poecilus</i>	<i>sericeus</i>	2		
<i>Pseudoophonus</i>	<i>rufipes</i>	2	15	87
<i>Syntomus</i>	<i>truncatellus</i>	1		

Tab.2

Locality		Vyšavy		
		13.5.2013	7.6.2013	28.6.2013
<i>Amara</i>	<i>ovata</i>		1	
<i>Amara</i>	<i>similata</i>			1
<i>Brachinus</i>	<i>crepitans</i>	14		3
<i>Harpalus</i>	<i>anxius</i>			1
<i>Harpalus</i>	<i>atratus</i>	1	2	1
<i>Harpalus</i>	<i>caspius roubali</i>	4	9	4
<i>Harpalus</i>	<i>distinguendus</i>			1
<i>Harpalus</i>	<i>rubripes</i>			4
<i>Harpalus</i>	<i>serripes</i>	3	2	
<i>Harpalus</i>	<i>signaticornis</i>	1		
<i>Harpalus</i>	<i>tardus</i>	49	21	18
<i>Licinus</i>	<i>cassideus</i>		1	
<i>Microlestes</i>	<i>maurus</i>	2		1
<i>Ophonus</i>	<i>azureus</i>	4	4	17
<i>Ophonus</i>	<i>puncticeps</i>		1	
<i>Pseudoophonus</i>	<i>rufipes</i>	1	2	12
<i>Syntomus</i>	<i>truncatellus</i>			1

Tab. 3

Locality		Afaberky		
		13.5.2013	7.6.2013	28.6.2013
<i>Amara</i>	<i>aenea</i>	1		
<i>Amara</i>	<i>aulica</i>	1		
<i>Amara</i>	<i>ovata</i>		1	
<i>Amara</i>	<i>similata</i>	1		
<i>Anchomenus</i>	<i>dorsalis</i>	12	2	9
<i>Brachinus</i>	<i>crepitans</i>	21	13	1
<i>Brachinus</i>	<i>explodens</i>	31	2	7
<i>Carabus</i>	<i>ulrichii</i>		4	2
<i>Drypta</i>	<i>dentata</i>		1	1
<i>Harpalus</i>	<i>anxius</i>		1	
<i>Harpalus</i>	<i>atratus</i>		1	
<i>Harpalus</i>	<i>caspius roubali</i>	2	3	2
<i>Harpalus</i>	<i>pumilus</i>		1	
<i>Harpalus</i>	<i>rubripes</i>	5		2
<i>Harpalus</i>	<i>tardus</i>	2		1
<i>Microlestes</i>	<i>maurus</i>			1
<i>Microlestes</i>	<i>minutulus</i>	1		4
<i>Ophonus</i>	<i>azureus</i>	2		
<i>Ophonus</i>	<i>puncticollis</i>	2	1	1
<i>Poecilus</i>	<i>cupreus</i>	3		
<i>Poecilus</i>	<i>sericeus</i>	2	1	
<i>Pseudoophonus</i>	<i>rufipes</i>	6	6	4

Tab. 4

Locality		Nosislav		
		15.5.2013	29.6.2013	8.6.2013
<i>Amara</i>	<i>ovata</i>	1		
<i>Brachinus</i>	<i>crepitans</i>	9	5	9
<i>Calosoma</i>	<i>auropunctatum</i>	1		
<i>Harpalus</i>	<i>atratus</i>	3		1
<i>Harpalus</i>	<i>caspius roubali</i>		1	
<i>Harpalus</i>	<i>distinguentus</i>	1		1
<i>Harpalus</i>	<i>pumilus</i>	13	4	
<i>Harpalus</i>	<i>rubripes</i>	38	12	7
<i>Harpalus</i>	<i>serripes</i>	17	10	3
<i>Harpalus</i>	<i>tardus</i>	2		
<i>Microlestes</i>	<i>fissuralis</i>	4		
<i>Microlestes</i>	<i>maurus</i>	28	5	14
<i>Microlestes</i>	<i>minutulus</i>	9		11
<i>Ophonus</i>	<i>azureus</i>	10	3	21
<i>Poecilus</i>	<i>cupreus</i>	1		1
<i>Pseudoophonus</i>	<i>rufipes</i>			2
<i>Syntomus</i>	<i>truncatellus</i>		1	3

Fig.1: Situation of landscape mosaic of the surroundings of locality Rozhledna (experimental plot is marks by red colour)



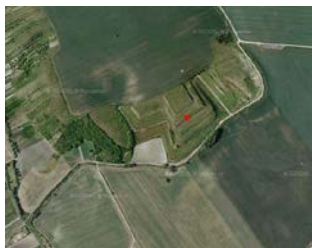
Fig.2: Situation of landscape mosaic of the surroundings of locality Vyšavy (experimental plot is marks by red colour)



Fig.3: Situation of landscape mosaic of the surroundings of locality Afaberky (experimental plot is marks by red colour)



Fig.4: Situation of landscape mosaic of the surroundings of locality Nosislav village (experimental plot is marks by red colour)



## CONCLUSIONS

Although, many agricultural changes of the Výchon hill, there are still nice indication that, the place still host very valuable invertebrate fauna. The Rozhledna locality (Tab. 1) was found highest number of *Brachinus crepitans*, which occurred at all localities. On location Afaberky (Tab. 3) was found highest number of species of ground beetles. Great representation of the different species in this area is probably due to the greater diversity of plant communities. For other locations dominated communities of grasses. In this locality, there have been large quantities of different species of shrubs and trees. The data are still preliminary, but on the other hand, the presence of some species is unique in the context of whole Czech Republic. Further data will be available after end of the season 2013.

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