

## Notes on soldier beetles (Coleoptera: Cantharidae) of montane forest stands in the Novohradské Hory Mts., Czech Republic

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### Abstract

The data on 119 specimens of 25 species of soldier beetles (Coleoptera: Cantharidae) from montane forest stands of the Novohradské Hory Mts. are presented. The species spectrum reflected the stands; forest and predominantly forest species prevailed in the material. Many typical montane species were found, such as *Ancistronycha abdominalis* (Fabricius, 1798), *Cantharis paludosa* Fallén, 1807, *Malthodes alpicola* Kiesenwetter, 1852, *Malthodes fuscus* (Waltl, 1838), *Malthodes mysticus mysticus* Kiesenwetter, 1852, *Podabrus alpinus* (Paykull, 1798), *Podistra schoenherri* (Dejean, 1836), *Rhagonycha atra* (Linnaeus, 1767), and *Rhagonycha nigriceps* (Waltl, 1838). The most important were the records of *Malthodes alpicola* and *Rhagonycha nigriceps*. The distribution of both species is discussed.

*Key words:* *Rhagonycha nigriceps*, *Malthodes alpicola*, distribution, faunistics

### INTRODUCTION

The knowledge on the fauna of Cantharidae of the Czech Republic is rather poor. Most of the data were published from numerous single localities, yet only few recent studies have focused on soldier beetles of larger areas: the Broumovsko Protected Landscape Area (HAMET & VANCL 2005), the Brdy hills and wider surroundings of the town of Příbram (URBAN & VONIČKA 2006), the Moravský Kras Protected Landscape Area (HAMET et al. 2009), the Křivoklátsko Protected Landscape Area (RÉBL 2010, MORAVEC & RÉBL 2012), or the southern Bohemian Forest (DVOŘÁK 2010).

As far as I know, yet no paper has focused on soldier beetle fauna of any locality of the Novohradské Hory Mts. Some material from this mountain range has been deposited in the collection of the National Museum in Prague and in several private collections, but these data have been neither evaluated nor summarized yet. This paper brings the first summarized data from several localities of the Novohradské Hory Mts.

### MATERIAL AND METHODS

Most of the present material was collected by Štěpán Vodka using window traps situated on tree trunks and by Roman Modlinger using Malaise traps situated inside the forest. I have examined also some specimens collected by several persons; their records are included as Additional data.

Beetles were identified by the author using DAHLGREN (1979) and WITTMER (1979); few specimens were revised by Vladimír Švihla (National Museum, Prague). The nomenclature

follows KAZANTSEV & BRANCUCCI (2007) except the name *Ancistronycha cyanipennis*, for which I follow the study of SILFVERBERG (1977). Several voucher specimens are deposited in the author's private collection and in the collection on the Municipal Museum Mariánské Lázně. Explanations of some abbreviations: LD = Libor Dvořák, NMPC = National Museum Prague Collection.

### Localities under study

The survey was carried out on several sites at elevations about 750–900 m a.s.l. The exact data are listed as follows: locality, grid code of the faunistic square (e.g., PRUNER & MÍKA 1996), biotope, and altitude, trapping method, author of the collection, and the locality code used in the text.

Hojná Voda, Hojná Voda Nature Reserve (7254), beech forest, 845–900 m a.s.l., window trap, Š. Vodka leg. (HWT).

Žofín, Pivonické Skály rocks (7354), beech forest on NW and N slope of the Stříbrný Vrch Mt., 815–905 m a.s.l., window trap, Š. Vodka leg. (SWT).

Žofín, Žofínský Prales Nature Reserve (7354), beech forest, part after a windbreak, 785–820 m a.s.l., window trap, Š. Vodka leg. (PWT).

Žofín, Žofínský Prales Nature Reserve (7354), beech forest, part without a windbreak, 760–785 m a.s.l., window trap, Š. Vodka leg. (ŽWT).

Žofín, Žofínský Prales Nature Reserve (7354), beech forest, 760 m a.s.l., Malaise trap, R. Modlinger leg. (ŽMT).

## RESULTS AND DISCUSSION

### List of species

The species are listed alphabetically. The list contains the following data: locality code, date of the collection, and number of specimens. The material of random collections is summarised as Additional data. The distribution and habitat preferences of each species in the Czech Republic are also added.

*Ancistronycha abdominalis* (Fabricius, 1798)

**Additional data:** Hojná Voda (7254), 6 Jul 2006, 1 ex., L. Bobot leg. et coll., LD det.

Rare species of mountain forests known from almost all mountain ranges of the Czech Republic (see Fig. 1 for its distribution based on few published data and LD database).

*Ancistronycha cyanipennis* (Faldermann, 1835)

**SWT**, 25 May–18 Jun 2009, 1 ex.

Widely distributed species preferring submontane forests and their margins. It is usually found as single individuals.

*Ancistronycha erichsonii* Bach, 1854

**Additional data:** Žofín (7354), Žofínský Prales Nature Reserve, 16 Jul 2003, 1 ex., on light, F. Houška leg. et coll., LD det.

Rare species of submontane and montane forests.

*Cantharis figurata* Mannerheim, 1843

**Additional data:** Pohorská Ves (7354), Hutský Rybník pond, 7 Jul 2011, 4 ex., V. Benediktová leg., LD det., V. Benedikt coll.

Common species of wet meadows and peat-bogs.

*Cantharis flavilabris* Fallén, 1807

**Additional data:** Hojná Voda (7254), 6 Jul 2006, 1 ex., L. Bobot leg. et coll., LD det. Horní Stropnice

(7254), 6 Jul 2006, 1 ex., E. Ezer leg. et coll., LD det. Pohorská Ves (7354), 7 Jul 2006, 2 ex., E. Ezer leg. et coll., LD det. Pohorská Ves (7354), Hutský Rybník pond, 7 Jul 2011, 1 ex., V. Benediktová leg., LD det. V. Benedikt coll.

Relatively common species prefers dump habitats, usually found on meadows.

*Cantharis nigricans* O.F. Müller, 1776

SWT, 25 May–18 Jun 2009, 1 ex.; 14 May–10 Jun 2010, 1 ex.

**Additional data:** Hojná Voda (7254), 6 Jul 2006, 1 ex., E. Ezer leg. et coll., LD det.

Common eurytopic species prefers open stands and ecotons.

*Cantharis pagana* Rosenhauer, 1847

HWT, 18 Jun–10 Jul 2009, 1 ex.

Submontane to montane species, sparsely found on damp habitats, predominantly in forests. Its distribution in the Czech Republic was summarised by ŠVIHLA (2006).

*Cantharis paludosa* Fallén, 1807

PWT, 25 May–18 Jun 2009, 1 ex.

**Additional data:** Pohorská Ves (7354), Hutský Rybník pond, 7 Jul 2011, 1 ex., V. Benediktová leg., LD det., V. Benedikt coll.

Widely distributed stenotopic species occurs on cold peat-bogs, mires, and swamps.

*Cantharis pellucida* Fabricius, 1792

SWT, 18 Jun–10 Jul 2009, 1 ex.

**Additional data:** Pohorská Ves (7354), Hutský Rybník pond, 7 Jul 2011, 1 ex., V. Benediktová leg., LD det., V. Benedikt coll.

Common eurytopic species prefers open stands.

*Malthinus biguttatus* (Linnaeus, 1758)

ŽMT, 24 Jun–12 Jul 2008, 2 ex.

Common montane and submontane forest species.

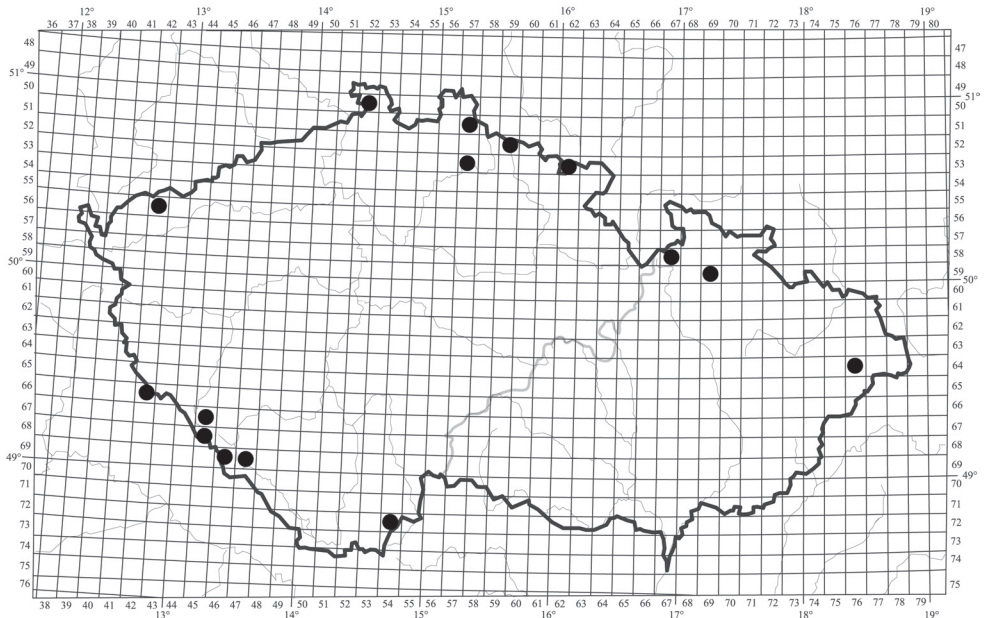


Fig. 1. The distribution of *Ancistrorycha abdominalis* in the Czech Republic.

*Malthinus flaveolus* (Herbst, 1786)

**HWT**, 10 Jul–19 Aug 2009, 1 ex. **PWT**, 5–27 Jul 2010, 1 ex.

Common forest species of lower and medium altitudes.

*Malthodes alpicola* Kiesenwetter, 1852

**HWT**, 5–27 Jul 2010, 1 ex.

Very rare species known nearly exclusively from the Alps, with isolated occurrence in some adjacent regions including the Bohemian Forest. The present record is the first one outside the Bohemian Forest in the Czech Republic (see Fig. 2); see DVOŘÁK (2010) for comments on the species' distribution in Europe.

*Malthodes fuscus* (Waltl, 1838)

**HWT**, 18 Jun–10 Jul 2009, 1 ex. **PWT**, 18 Jun–10 Jul 2009, 5 ex.

Common montane forest species.

*Malthodes guttifer* Kiesenwetter, 1852

**PWT**, 18 Jun–10 Jul 2009, 1 ex. **SWT**, 18 Jun–10 Jul 2009, 1 ex.

Relatively rare montane forest species.

*Malthodes hexacanthus* Kiesenwetter, 1852

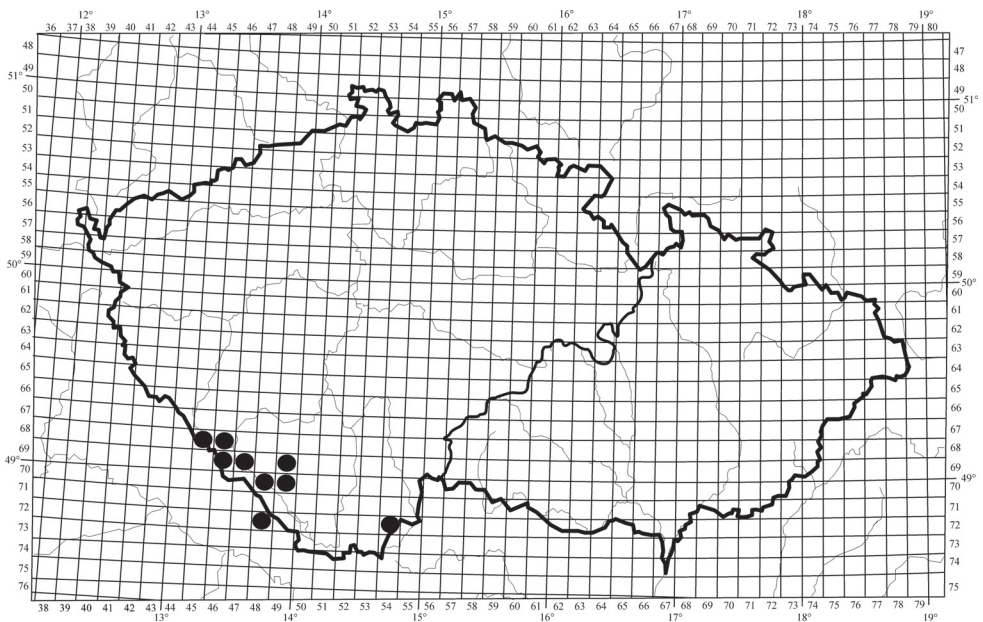
**HWT**, 10 Jul–19 Aug 2009, 1 ex. **SWT**, 18 Jun–10 Jul 2009, 1 ex. **ŽWT**, 25 May–18 Jun 2009, 2 ex.

Relatively common forest species.

*Malthodes mysticus mysticus* Kiesenwetter, 1852

**HWT**, 18 Jun–10 Jul 2009, 1 ex. **PWT**, 10 Jun–5 Jul 2010, 1 ex. **ŽMT**, 24 Jun–12 Jul 2008, 1 ex.

Rare forest species of moderate and higher altitudes.



**Fig. 2.** The distribution of *Malthodes alpicola* in the Czech Republic.

*Podabrus alpinus* (Paykull, 1798)

**HWT**, 10 Jul–19 Aug 2009, 1 ex.; 10 Jun–5 Jul 2010, 1 ex.; 14 May–10 Jun 2010, 1 ex. **PWT**, 18 Jun–10 Jul 2009, 1 ex.; 14 May–10 Jun 2010, 2 ex. **ŽMT**, 30 May–24 Jun 2008, 2 ex.

Boreo-montane species occurs mainly in montane forests, occasionally at lower and moderate altitudes, but always in larger forests of inverse stands.

*Podistra rufotestacea* (Letzner, 1845)

**HWT**, 25 May–18 Jun 2009, 1 ex.; 18 Jun–10 Jul 2009, 1 ex.; 10 Jul–19 Aug 2009, 2 ex.; 10 Jun–5 Jul 2010, 1 ex. **PWT**, 18 Jun–10 Jul 2009, 5 ex.; 10 Jul–19 Aug 2009, 2 ex.; 10 Jun–5 Jul 2010, 1 ex. **SWT**, 14 May–10 Jun 2010, 2 ex. **ŽWT**, 18 Jun–10 Jul 2009, 2 ex.; 10 Jul–19 Aug 2009, 1 ex.; 10 Jun–5 Jul 2010, 1 ex.; 14 May–10 Jun 2010, 1 ex. **ŽMT**, 30 May–24 Jun 2008, 9 ex.; 24 Jun–12 Jul 2008, 2 ex.

Widely distributed, but not abundant montane and submontane species.

*Podistra schoenherri* (Dejean, 1836)

**HWT**, 25 May–18 Jun 2009, 1 ex.; 18 Jun–10 Jul 2009, 2 ex.; 10 Jun–5 Jul 2010, 1 ex. **ŽWT**, 25 May–18 Jun 2009, 1 ex.; 18 Jun–10 Jul 2009, 1 ex.

Common montane species occurs mainly in forests and peatbogs.

*Rhagonycha atra* (Linnaeus, 1767)

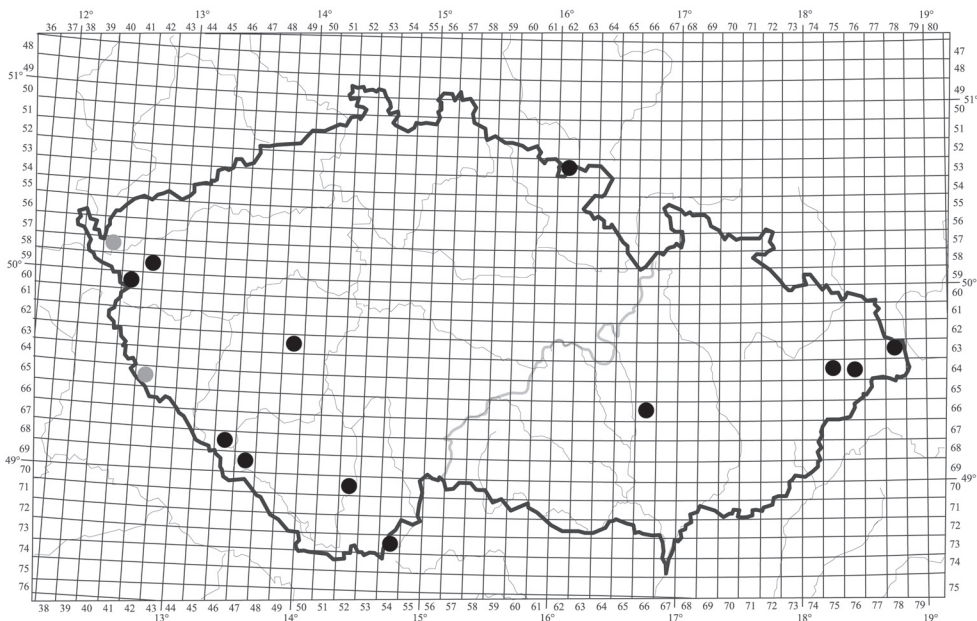
**PWT**, 5–27 Jul 2010, 1 ex.

Rare species of humid mountain forests (see Fig. 3 for its distribution in the Czech Republic based on few published data and LD database).

*Rhagonycha gallica* Pic, 1923

**HWT**, 10 Jul–19 Aug 2009, 1 ex. **SWT**, 18 Jun–10 Jul 2009, 1 ex.; 5–27 Jul 2010, 1 ex. **ŽMT**, 24 Jun–12 Jul 2008, 1 ex.

Relatively common species of leaf forests.



**Fig. 3.** The distribution of *Rhagonycha atra* in the Czech Republic – black circles: verified recent records; grey circles: not verified old records from the first half of the 20<sup>th</sup> century.

*Rhagonycha lignosa* (O.F. Müller, 1764)

**HWT**, 25 May–18 Jun 2009, 1 ex. **PWT**, 18 Jun–10 Jul 2009, 1 ex.; 14 May–10 Jun 2010, 1 ex. **SWT**, 25 May–18 Jun 2009, 1 ex.; 18 Jun–10 Jul 2009, 1 ex. **ŽMT**, 30 May–24 Jun 2008, 4 ex.

Common species of light bushy stands and light open forests; rare species at higher altitudes.

*Rhagonycha nigriceps* (Waltl, 1838)

**SWT**, 18 Jun–10 Jul 2009, 2 ex.

**Additional data:** Žofín (7354), 11 Jul 2001, 3 ex., V. Křivan leg., V. Švihla det., LD et NMPC coll. Žofín (7354), Žofínský Prales Nature Reserve, 18 Jul 2004, 1 ex., O. Nakládal leg., V. Švihla det., NMPC coll. ; 16 Jul 2003, on light, F. Houška leg. et coll., LD det., Huťský Rybník (7354), 19 Jul 2004, 1 ex., O. Nakládal leg., V. Švihla det., NMPC coll.

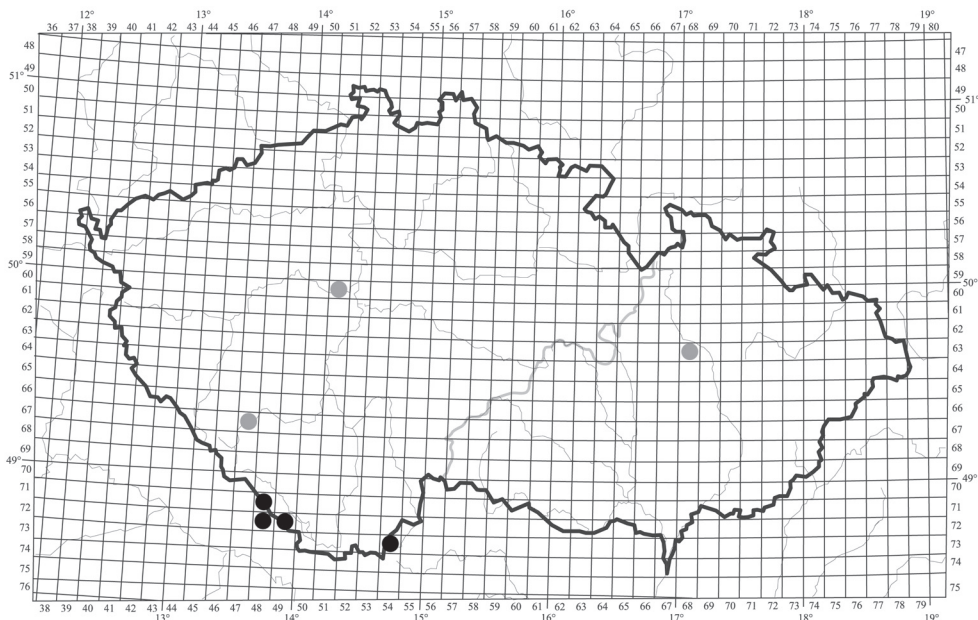
Rare species of montane forests. *Rhagonycha nigriceps* is an enigmatic species. There are three historical records of this species from lower altitudes of central and southwestern Bohemia, and central Moravia:

**Karlík** (6051), Karlické údolí valley (BLATTNÝ 1912). **Sušice** (6747), Jul 1942, 1 ex., Fabich leg., V. Švihla det., NMPC coll. **Střeň** (6368), without date, 1 ex., Syrovátka leg., V. Švihla det., NMPC coll.

Two of these records are deposited in the NMPC, so identification by V. Švihla is correct. The occurrence of *R. nigriceps* in similar lowland biotops needs confirmation by new records. Besides the present data from the Novohradské Hory Mts., there are only few records in the southeastern part of the Bohemian Forest:

**Nová Pec** (7249), Rossbach, mountain forest, 25 Jun 2010, 1 ex., V. Hanzlík leg., LD det. et coll. **Nová Pec** (7249), 900 m a.s.l., 26 Jul 2010, 1 ex., P. Čížek leg., det. et coll. **Stožec** (7148), 8–16 Jul 2005, 2 ex., V. Dongres leg. et coll., LD det. **Stožec** (7148), without date, 2 ex., Klička leg., V. Švihla det., NMPC coll. **Trojmezná** (7248) (DVOŘÁK 2010).

According to present knowledge, the current distribution of *R. nigriceps* in the Czech Republic is restricted to montane forests of the southernmost parts of Bohemia (Fig. 4).



**Fig. 4.** The distribution of *Rhagonycha nigriceps* in the Czech Republic – black circles: verified recent records; grey circles: not verified old records from the first half of the 20<sup>th</sup> century.

**Table 1.** Numbers of soldier beetles at different localities during the survey – for locality codes see Material and methods; AD – additional data, collected individually on various localities.

	HWT	SWT	PWT	ŽWT	ŽMT	AD	All
<i>A. abdominalis</i>						1	1
<i>A. cyanipennis</i>		1					1
<i>A. erichsonii</i>						1	1
<i>C. figurata</i>						4	4
<i>C. flavilabris</i>						5	5
<i>C. nigricans</i>		2				1	3
<i>C. pagana</i>	1						1
<i>C. paludosa</i>			1			1	2
<i>C. pellucida</i>		1				1	2
<i>M. biguttatus</i>				2			2
<i>M. flaveolus</i>	1		1				2
<i>M. alpicola</i>	1						1
<i>M. fuscus</i>	1		5				6
<i>M. guttifer</i>		1	1				2
<i>M. hexacanthus</i>	1	1		2			4
<i>M. mysticus</i>	1		1		1		3
<i>P. alpinus</i>	3		3		2		8
<i>P. rufotestacea</i>	5	2	8	5	11		31
<i>P. schoenherri</i>	4			2			6
<i>R. atra</i>			1				1
<i>R. gallica</i>	1	2			1		4
<i>R. lignosa</i>	1	2	2		4		9
<i>R. nigriceps</i>		2				6	8
<i>R. testacea</i>						1	1
<i>R. translucida</i>	5	1	3		2		11
No. of specimens	25	15	26	11	21	21	<b>119</b>

*Rhagonycha testacea* (Linnaeus, 1758)

**Additional data:** Pohorská Ves (7354), Hut'ský Rybník pond, 7 Jul 2011, 1 ex., V. Benediktová leg., LD  
Sparsely distributed species of leaf forests on rocky substrate prefers moderate altitudes.

### Comments

Altogether 119 specimens of 25 species of soldier beetles were found at the localities under study (Table 1). HWT is the species-richest (12 species) locality followed by SWT and PWT (both 10 species). A typical montane taxocenose at the localities is represented by the species *M. alpicola*, *P. alpinus*, *P. rufotestacea*, *P. schoenherri*, *R. atra*, and *R. nigriceps*. The species *P. rufotestacea* represents 26% of all captured specimens (cf. Table 1). The high number of specimens of this species is unusual, it is regularly found in lower numbers (e.g., DVOŘÁK 2010).

Altogether 21 specimens were collected randomly. Five species were not trapped on the regularly studied localities (Table 1). The most interesting record of these random samples is the finding of rare mountain species *A. abdominalis*.

ŠVIHLA (2005) ranked the species *M. alpicola* among endangered species for the fauna of the Czech Republic.

### CONCLUSIONS

The soldier beetle fauna of the study area is formed by several very typical montane species and several forest species. The records of *Ancistronycha abdominalis*, *Rhagonycha atra*, *R.*

*nigriceps*, and *Malthodes alpicola* are very important for improving of our knowledge of this beetle family in the Czech Republic.

I could compare the present results only with some unpublished data due to the missing literature on the Cantharidae fauna of any mountain region of the Czech Republic. With the exception of few locally distributed species, the soldier beetle fauna of montane forests of the Novohradské Hory Mts. is, in general, very similar to the taxocenoses known from similar biotops in the Bohemian Forest, the Český Les Mts., the Krušné Hory Mts. (the Ore Mts.), or the Krkonoše Mts. (the Giant Mts.) (L. DVOŘÁK, unpubl. data).

**Acknowledgements.** This study was partly supported by Czech Ministry of Environment grant no. MSM 6293359101 and contract no. DOD 0010/08/064. This study was undertaken with the permission of the Czech government no. 1473/09. R. Modlinger, Š. Vodka, E. Ezer, L. Bobot, and V. Benedikt provided the material, V. Švihla kindly revised some specimens and allowed for studying the NMPC.

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Received: 24 April 2012

Accepted: 6 June 2012