

The occurrence of the Red-winged Grasshopper *Oedipoda germanica* in the Czech Republic (Orthoptera: Acridiidae)

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HOLUŠA J., MARHOUL P., ŠTĚPÁNOVÁ L. & KOČÁREK P. 2009: The occurrence of the Red-winged Grasshopper *Oedipoda germanica* in the Czech Republic (Orthoptera: Acridiidae). *Acta Musei Moraviae, Scientiae biologicae* 94: 15–21. – *Oedipoda germanica* has been confirmed in almost all its historical localities in the Czech Republic. The main range is the valley of the Radotín brook [*Radotínský potok*] at the south-west edge of Prague, and the surroundings of Velká Chuchle. The current situation of the species in the central part of the Czech Karst protected landscape area (central Bohemia) remains unclear but additional localities have been discovered. In the Czech Highlands (northern Bohemia), three localities were previously known but the population survives only in the locality of Košťálov. With the exception of one place in Prague, all other localities are situated on the left banks of the Vltava and Labe rivers, indirectly demonstrating that this species is not able to surmount rivers. *O. germanica* was found on steep, non-weedy parts of rocks, ledges, debris, and worked-out parts of quarries. It is appropriate to classify the species as critically endangered in the Czech Republic.

Keywords. *Oedipoda germanica*, distribution, Czech Republic

Introduction

The genus *Oedipoda* includes 25 species, widespread in the Palaearctic and Ethiopian regions. There are eight species in Europe, only two of them in the Czech Republic – *Oedipoda caerulescens* (Linnaeus, 1758) and *O. germanica* (Latreille, 1804). However, whereas *O. caerulescens* is found in great numbers in the Czech Republic, *O. germanica* is very rare and occurs only in the Czech Highlands [České středohoří] and the Czech Karst [Český kras] (KOČÁREK *et al.* 2005). Apart from doubtful comments made by OBENBERGER (1926), only a few authors (SEIDL 1836, KREJČÍ 1896, MAŘAN 1965, ČEJCHAN 1959, 1980, HONCŮ 1993) have reported the occurrence of this species in the Czech Republic. We have recently found or confirmed this species in certain localities.

Abbreviations for nature conservation areas

NNR	National Nature Reserve
NNM	National Natural Monument
NR	Nature Reserve
NM	Natural Monument

List of *Oedipoda germanica* records in the Czech Republic (Fig. 1)

Published data.

Velká Chuchle (orig. Chuchle u Prahy) (5952), 50°1'9.5"N, 14°23'8.5"E (SEIDL 1836).
 Dolní Chabry (orig. Chabry u Prahy) (5852), 50°8'33.5"N, 14°28'4.5"E (KREJČÍ 1896).
 Radotínské údolí (6052) 49°59'60"N, 14°18'48.5"E (ČEJCHAN 1959).
 Oblík NNR (5548), 50°24'42"N, 13°48'29"E, Milá NR (5548), 50°26'5"N, 13°45'27"E, Radotín (6052), 49°59'36"N, 14°20'42"E; Karlštejn (6051) 49°55'53.5"N, 14°11'20"E (MAŘAN 1965).
 Košťálov NM (5549), 50°29'22"N, 13°59'5.5"E, 1.x.1980, 1 ♂/2 ♀, Černá rokle pod Kosoří NNM (6052), 49°59'24"N, 14°20'24"E, 12.ix.1980, 1 ♂/0 ♀, Klonk u Suchomast NNM (6050), 49°54'4"N, 14°3'36"E, 20.ix.1980, 2 ♂/1 ♀ (ČEJCHAN 1980).
 Košťálov NM (5549), 50°29'22"N, 13°59'5.5"E, 10 ex. observ., 7.viii.1988, 2 ♂/1 ♀, leg., det. et coll. M. Honců (HONCŮ 1993).

Unpublished data.

Cikánka II NM (5951), 50°0'6"N, 14°19'35"E, 19.v.–20.viii.2007, 2 ♂/4 ♀ (pitfall traps); 22.vii.2007, 0 ♂/1 ♀ (sweeping); July 22.vii.–20.viii.2007, 0 ♂/2 ♀ (pitfall traps); 19.v.–4.vi.2007, 1 ♂/0 ♀ (pitfall traps) leg. R. Tropek, det. et coll. P. Kočárek.
 Černá rokle pod Kosoří NNM (6052), 49°59'24"N, 14°20'24"E, 7.vii.2003, a few ex., observ. J. Holuša; 10.x.2005, 1 ♂/0 ♀, observ. P. Marhoul.
 Homolka NR (5952), 50°0'52"N, 14°22'26"E, 23.ix.2007, 1 ♂/1 ♀, 21.viii.2008, 35 ♂/29 ♀, observ. P. Marhoul.
 Hviždalka NM (6051), 49°59'45"N, 14°19'49"E, 22.vii.–20.viii.2007, 0 ♂/2 ♀ (pitfall traps), leg. R. Tropek, det. et coll. P. Kočárek.
 Klonk NNM (6050), 49°54'2.5"N, 14°3'44"E, 30.vii.2004, 11 ♂/8 ♀, leg., det. et coll. J. Holuša; 10.ix.2005, 1 ♂/6 ♀, observ., 0 ♂/1 ♀, leg., det. et coll. P. Marhoul.
 Koda NNR (6050), 49°56'2"N, 14°7'26"E, 28.ix.1959, 0 ♂/1 ♀, leg. P. Pecina, coll. Muzeum and Gallery Relating to National History and Geography in Česká Lípa, det. L. Štěpánová.
 Košťálov NM (5549), 50°29'22"N, 13°59'5.5"E, 23.vii.2001, 10 ex., observ. 19.viii.2004, 2 ♂/1 ♀, leg., det. et coll. J. Holuša; 22.vii.–20.x.2008, 41 ♂/30 ♀, observ. L. Štěpánová.
 Lochkovský profil NNM (6051-6052), 49°59'55"N, 14°19'54.5"E, 11.ix.2005, 5 ♂/2 ♀, observ., 1 ♂/0 ♀, 8.x.2006, 10 ♂/2 ♀ observ. P. Marhoul.
 Radotínské skály NM (6052), 49°59'36"N, 14°20'42"E, 10.x.2005, 1 ♂/0 ♀, 15.vii.2008, 10 ♂/6 ♀, 31.viii.2008, 20 ♂/15 ♀, observ. P. Marhoul.

Remarks

In Europe, *O. germanica* is found in the south-west as far as the Pyrenees mountain range and in the east as far as Crimea. It reaches 2400 metres above sea level (the Alps). In Germany its occurrence is confirmed in Northern Westphalia, Thuringia, and in the south of Saxony-Anhalt, which is also the northern limit of its distribution in Europe (WAGNER 2000).

The Czech Republic also constitutes part of the northern limit of its distribution. *O. germanica* was confirmed almost in all its historical localities (Fig. 1). Additional

SPECIES/LOCALITY	Cikánka	Černá rokle pod Kosoří	Homolka	Hvízdalka	Klonk	Košálov	Lochkovský profil	Milá	Oblík	Radotínské skály
<i>Calliptamus italicus</i> (Linnaeus, 1758)	x	x					x			x
<i>Chorthippus apricarius</i> (Linnaeus, 1758)	x	x	x			x		x	x	
<i>Chorthippus biguttulus</i> (Linnaeus, 1758)	x	x	x	x		x	x	x	x	
<i>Chorthippus brunneus</i> (Thunberg, 1815)	x			x		x				
<i>Chorthippus dorsatus</i> (Zetterstedt, 1821)	x					x		x	x	
<i>Chorthippus mollis</i> (Charpentier, 1825)	x		x	x			x		x	
<i>Chorthippus parallelus</i> (Zetterstedt, 1821)	x	x		x				x		
<i>Chorthippus vagans</i> (Eversmann, 1848)		x	x			x	x	x	x	x
<i>Euthystira brachyptera</i> (Ocskay, 1826)	x			x		x				
<i>Euchorthippus pulvinatus</i> (Fischer von Waldheim, 1846)								x	x	
<i>Gryllus campestris</i> Linnaeus, 1758	x			x				x		
<i>Leptophyes albobittata</i> (Kollar, 1833)	x	x		x			x	x	x	x
<i>Meconema thalassinum</i> (De Geer, 1773)						x				
<i>Metrioptera bicolor</i> (Philippi, 1830)						x		x	x	
<i>Metrioptera roeselii</i> (Hagenbach, 1822)			x							
<i>Myrmeleotettix maculatus</i> (Thunberg, 1815)	x									
<i>Nemobius sylvestris</i> (Bosc, 1792)	x	x	x	x		x	x		x	x
<i>Oecanthus pellucens</i> (Scopoli, 1763)	x			x						x
<i>Oedipoda caerulea</i> (Linnaeus, 1758)	x	x	x	x	x		x	x	x	x
<i>Oedipoda germanica</i> (Latreille, 1804)	x	x	x	x	x	x	x			x
<i>Omocestus haemorrhoidalis</i> (Charpentier, 1825)									x	
<i>Pholidoptera griseoaptera</i> (De Geer, 1773)		x				x	x	x		x
<i>Platycleis albopunctata albopunctata</i> (Goeze, 1778)	x		x	x	x	x	x		x	x
<i>Stenobothrus crassipes</i> (Charpentier, 1825)	x						x			
<i>Stenobothrus eurasius bohemicus</i> Maran, 1958								x	x	
<i>Stenobothrus lineatus</i> (Panzer, 1796)	x	x		x		x		x	x	
<i>Stenobothrus nigromaculatus</i> (Herrich-Schäffer, 1840)	x					x				x
<i>Tetrix tenuicornis</i> Sahlberg, 1893	x	x		x						
<i>Tettigonia viridissima</i> Linnaeus, 1758		x				x		x	x	x

Tab. 1. Survey of grasshoppers and crickets in the localities studied.

localities were also discovered in the Czech Karst. The main range is the valley of the Radotín brook at the south-west edge of Prague (Černá rokle pod Kosoří, Cikánka, Hvízdalka, Lochkovský profil, Radotínské skály) and the surroundings of Velká Chuchle (the localities of Chuchle and Homolka are probably practically identical). Klonk is an isolated locality in which the occurrence has continued to be confirmed, whereas it is absent from the locality of Chabry. Nevertheless, these places are not very distant from one another and they are in the immediate surroundings of Prague. The Koda reserve represents a new locality but the finding is historical. The current situation of the species

in the central part of the Czech Karst protected landscape area (Karlštejn, Koda) remains unclear. ČEJCHAN (1959) also gave Závist (today's Šance NR) in the list of localities he knew, but later stated that the observation was incorrect (ČEJCHAN 1980).

In the Czech Highlands, three localities were once known but the population remains only in the locality of Košťálov. Oblík and Milá, which were listed by MAŘAN (1965), were not confirmed either by ČEJCHAN (1980) or HONCŮ (1993). *O. germanica* probably does not live in these localities at present. A period of repeated and thorough searches of whole localities, including rock outcrops and debris slopes, failed to reveal the grasshopper (July 23–29, 2001; July 28; Aug. 30, 2003; Aug. 16–19, 2004; Aug. 1–4, 2005; July 25–29, 2006; July 19–30, 2008; observ. J. Holuša).

With the exception of the Chabry locality, all the other areas are situated on the left banks of the Vltava and Labe rivers, indirectly proving that this species is not able to surmount rivers. This supports MAŘAN'S (1965) hypothesis on the migration of *O. germanica* from north-west Germany.

O. germanica is found on steep, non-weedy parts of rocks, ledges, debris slopes, and worked-out parts of quarries (Figs 2–3). In the Cikánka II NM and Hvížd'alka NM study localities it was found only on non-reclaimed quarrying sites. The difference is significant in the locality of Cikánka II NM ($\chi^2=9.00$, $p<0.01$) but not so (in regard to two specimens trapped) in the locality of Hvížd'alka NM ($\chi^2=2.00$, $p>0.10$). The habitat soil surface is usually formed by shifting debris (often slaty); vegetation cover is either absent or made up of very sparse and low bush growth (cornel and similar). Grass and/or herbaceous vegetation is either not developed at all or consists of only very isolated and sparse enclaves of gramineous plants in lines or around bushes. In small-scale protected areas where *O. germanica* was found, 29 species of Orthoptera occurred (Table 1). The substantially xerothermic species *Calliptamus italicus*, *Chorthippus biguttulus*, *C. mollis*, *C. vagans*, and *Platycleis albopunctata* that also or solely occur in non-weedy, dry places are particularly characteristic of the microlocalities that *O. germanica* inhabits. *Oedipoda caerulescens* is also found in most of these places; in some of them it is far more plentiful than *O. germanica* (e.g. Klonk NNM); elsewhere it is rare (e.g. Homolka NR). In the Lochkovský profil NNM, the habitats of the two species barely overlap.

Most *O. germanica* localities are small areas and – with the exception of Radotínské skály NM – also isolated beyond possibility of mutual interconnection between migrating individuals. Localities becoming overgrown with bushes, together with associated changes of microclimatic conditions, represent the major threatening factors. In the past, the species has disappeared from Milá and Oblík with the onset of succession. Overgrowth largely endangers the habitats that have arisen from human activity (quarries); natural localities (e.g. the Lochkov Profile and Klonk) are probably in far less danger from natural succession. The situation is particularly critical in the locality of the Černá rokle pod Kosoří NNM, where bushes have expanded strongly in the past 30 years; the population of *O. germanica* is now found there only on a two-acre debris area and is

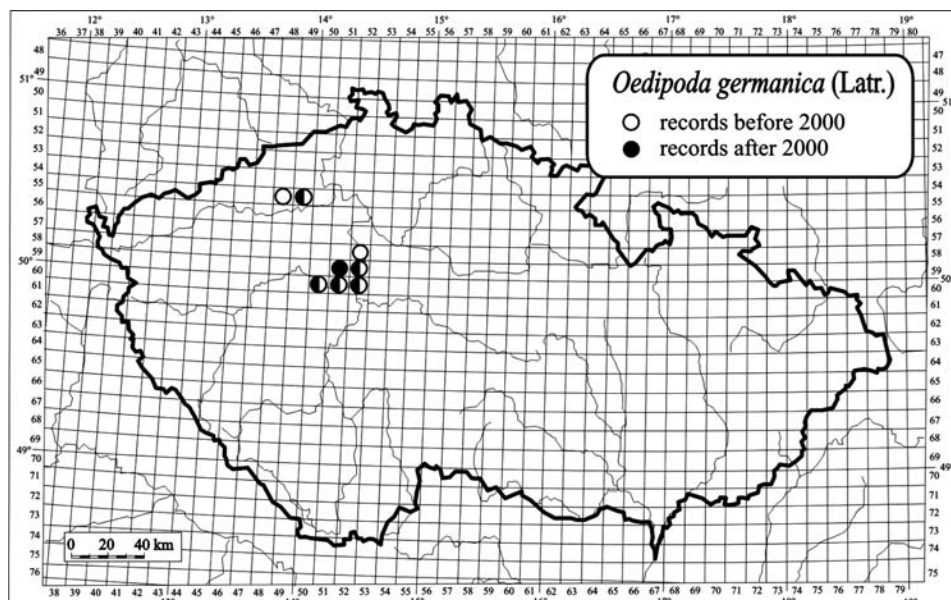


Fig. 1. Distribution of *Oedipoda germanica* in the Czech Republic.

not very numerous. With respect to the low total number of species localities in the Czech Republic, it is essential that all the localities be considered unique and provided with suitable management that includes the prevention of woody vegetation succession. It is appropriate to classify the species as critically endangered in the IUCN Red List of threatened species in the Czech Republic (HOLUŠA & KOČÁREK 2005).

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Fig. 2. Locality of Homolka NR with occurrence of *Oedipoda germanica*.



Fig. 3. Locality of Klonk NNM with occurrence of *Oedipoda germanica*.