

## DISTRIBUTION OF FOUR SPECIES OF OEDIPODINAE GRASSHOPPERS IN LITHUANIA (ORTHOPTERA: ACRIDIDAE)

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### Introduction

Several species of large grasshoppers from the subfamily Oedipodinae are declining in Northern Europe. Among those, *Oedipoda caerulea* (Linnaeus, 1758) is endangered in Denmark and Latvia; *Sphingonotus caeruleus* (Linnaeus, 1767) is endangered in Germany, Latvia and Lithuania; *Psophus stridulus* (Linnaeus, 1758) is endangered in Estonia, Germany, Latvia, Poland and Sweden; *Bryodemella tuberculata* (Fabricius, 1775) is endangered in Germany and Sweden; the latter species is considered regionally extinct in Denmark, Latvia and Poland (Artdatabanken...; Red...; The Danish...; Spuris, 1998; Hirneisen, 2003; Liana, 2004a, 2004b; Budrys, 2007).

The knowledge on the distribution of the Oedipodinae grasshoppers in Lithuania is based on a few publications in the early 20th century (Szeliga-Mierzeyewski, 1927; Grochowska, 1935) and a recent check-list (Budrys & Pakalniškis, 2007). One of the species, *Sphingonotus caeruleus*, is included in the national red data book (Budrys, 2007). There was an attempt to estimate the local population size of this and two other Oedipodinae species, using the mark-release-recapture method (Budrys *et al.*, 2004). It was suggested that *Psophus stridulus* might be declining in Lithuania and should be included into the national red data book as a vulnerable species. The lack of new observations of *Bryodemella tuberculata* implied that the species might be regionally extinct (Budrys & Pakalniškis, 2007). These suggestions needed a confirmation.

The Lithuanian Entomological Society has announced the four colour-winged and easy to recognise Oedipodinae grasshopper species as Insect of the Year 2008 (Lietuvos...). The aim of this action was a countrywide collection of data on the distribution of these relatively scarce insects. The objective of this publication is summarising of the gathered information and supplementing of the recently published checklist (Budrys & Pakalniškis, 2007) with the accumulated new data.

This study does not consider two other species of Oedipodinae of the Lithuanian fauna that have clear hind wings, *Stethophyma grossum* and *Locusta migratoria*. The former species is quite common in wetlands across the territory of Lithuania. *L. migratoria* is a southern migratory species that has reached Lithuania a few times during the last century; the latest observations were done in 1948 (Mastauskis, 1958).

## Material and Methods

The insects were observed, or their pictures were taken using digital cameras. Few specimens were collected using an entomological net. The latter specimens are preserved in the collection of the Institute of Ecology of Vilnius University.

The insects were observed or collected by V. Bačianskas (V.B.), A. Budrienė (A.B.), E. Budrys (E.B.), D. Dapkus (D.D.), A. Eismantas (A.E.), M. Ilčiukas (M.I.), R. Jakaitis (R.J.), L. Kalasaitis (L.K.), G. Steiblys (G.S.), G. Švitra (G.Š.), T. Ūsaitis (T.Ū.) and E. Vaitkutė (E.V.).

### List of localities

Aukštadvaris env., Trakai district	54°35'16"N, 24°31'29"E
Bačkonys env., Kaišiadorys district	54°48'13"N, 24°31'59"E
Drąseikiai, Kaunas district	55°00'15"N, 24°03'50"E
Dukstyna f., Ukmergė district	55°15'24"N, 24°49'16"E
Grabijolai, Elektrėnai mun.	54°50'41"N, 24°52'15"E
Indubakiai, Utena district	55°22'29"N, 25°50'41"E
Juodkrantė env., Neringa t.	55°32'12"N, 21°06'19"E
Lazdynai env., Vilnius city	54°40'29"N, 25°10'07"E
Musteika, Varėna district	53°57'15"N, 24°22'15"E
Naujoji Vilnia env., Vilnius city	54°41'30"N, 25°23'22"E
Pabradė military training area, Švenčionys district	55°03'38"–04'32"N, 25°50'13"–51'09"E
Pajuodenė, Utena district	55°19'33"N, 25°50'32"E
Pilaitė, Vilnius city	54°42'10"N, 25°11'04"E
Punios Šilas f., Alytus district	54°31'00"N, 24°02'00"E
Putriškės env., Kaišiadorys district	54°59'55"N, 24°30'28"E
Ramulėnai gravel pit, Radviliškis district	55°52'53"N, 23°31'28"E
Rizgonys env., Jonava district	55°09'03"N, 24°30'03"E
Rūdinkai military training area, Šalčininkai district	54°22'27"–22'41"N 25°05'49"–06'01"E
Stanuliškės env., Prienai district	54°32'42"N, 24°23'16"E
Svirplinė, Ukmergė district	55°14'24"N, 25°05'52"E
Šniūraičiai gravel pit, Radviliškis district	55°52'28"N, 23°29'30"E
Trasninkas env., Varėna district	54°06'45"N, 24°15'50"E
Verkiai env., Vilnius city	54°45'23"N, 25°18'04"E
Viešvilė state strict reserve, Tauragė district	55°10'00"N, 22°29'00"E
Zatyšiai, Kaunas district	55°03'00"N, 24°09'20"E
Želtiškiei, Anykščiai district	55°24'00"N, 25°14'40"E

### List of species

The listed records complement the checklist by Budrys & Pakalniškis (2007).

***Oedipoda caerulescens* (Linnaeus, 1758)**

Bačkonys env., 31 07 2008, 1♀; Putriškės env., 07 08 2008, multiple specimens (V.B.); Drąseikiai, 17 07 2008, 5♀, 4♂; 30 07 2008, 1♀, 1♂ (T.Ū.); Dukstyna f., 22 08 1997, 1 spec.; Naujoji Vilnia env., 27 07 2006, 1 spec.; Rizgonys, 09 08 1997, 1♂ (D.D.); Indubakiai, 08 2008, 1 spec.; Lazdynai env., 02 08 2008 and 07 08 2008, multiple specimens; Ramulėnai gravel pit, 07 2008, few specimens; Šniūraičiai gravel pit, 07 2008, few specimens; Verkiai env., 08 2008, multiple specimens (L.K.); Juodkrantė env., 12 07 2008, 1♂; Zatyšiai, 15 08 2007, 1♂ (G.S.); Pilaitė, 10 08 2005, 2♂; Trasninkas env., 17 07 2007, 3♀, 2♂ (E.B.); Pabradė military training area, 03 08 2008, multiple specimens in several sites (E.B., D.D., G.Š.); Rūdninkai military training area, 13 08 2008, multiple specimens in several sites (A.B., E.B.); Punios šilas f., 07 2003, 1♀ (R.J.); Želtiškiei, 29 07 2008, 1♀ (A.E.).

***Sphingonotus caerulans* (Linnaeus, 1767)**

Pabradė military training area, 03 08 2008, multiple specimens (E.B., D.D., G.Š.); Rūdninkai military training area, 13 08 2008, multiple specimens (A.B., E.B.).

***Psophus stridulus* (Linnaeus, 1758)**

Aukštadvaris env., 02 07 1999, 1♂; Svirplinė, 12 08 1997, 2♂ (D.D.); Lazdynai env., 07 08 2008 and 12 09 2008, several specimens; Šniūraičiai gravel pit, 07 2008, 1♂ (L.K.); Musteika, 13 08 2008, 2♂ (E.V.); Pabradė military training area, 03 08 2008, multiple specimens in several sites (E.B., D.D., G.Š.); Rūdninkai military training area, 13 08 2008, multiple specimens in several sites (A.B., E.B.)

***Bryodemella tuberculata* (Fabricius, 1775)**

Pabradė military training area, 03 08 2008, 2♀, 2♂ (E.B., D.D., G.Š.).

**Discussion**

The action “The Insect of the Year 2008” of the Lithuanian Entomological Society allowed to collect the distribution data on the four colour-winged species of Oedipodinae that might serve as a baseline for the assessment of abundance trends of these scarce grasshoppers in the future.

In Lithuania, *Oedipoda caerulescens* is the commonest and the most widespread species of the colour-winged Oedipodinae. It is quite abundant in suitable sandy habitats in the East and South of the country, as well as in the West, at the Baltic Sea shore. In contrast, it is very rare in the North of the country, where suitable habitats with sandy soil are lacking (Fig. 1).

*Psophus stridulus* seems to be restricted to the South-East of the country, with a single observation in central Lithuania, a gravel pit in the Radviliškis district (Fig. 1). Having in mind that the females of this stenotopic species have reduced wings and do not fly, surviving of isolated populations of it in suitable open habitats need observation and regular confirmation.

The populations of the protected *Sphingonotus caerulans* inhabit the grey dunes of the Nagliai preserve in the Curonian spit and a few sites with sandy open grasslands on the inland dunes and military training areas in the eastern part of Lithuania (Fig. 1).

The most striking result of the action “The Insect of the Year 2008” was the re-discovery of *Bryodemella tuberculata* in the East of Lithuania (Fig. 1). A population of this extremely rare species was found in the Pabradė military training area, close to Mažalotė, where it was recorded in the first half of the 20th century (Szeliga-

Mierzeyewski, 1927; Budrys & Pakalniškis, 2007). The species is considered extinct in neighbouring Latvia and Poland (Liana, 2004a; Spuris, 1998), thus the surviving population of *B. tuberculata* is important at the regional scale. It must be included in the national red list as an endangered species (1st category). The most important measures for conservation of it would be the maintenance of disturbed open habitats in the Pabradė military training area, as well as breeding *ex situ* and introduction in other suitable sites, such as the Rūdininkai military training area and the Musteika environs (former Pariečė military training area).

### Acknowledgements

The authors are grateful to the participants of the Young Entomologist Summer School of 2008, the other amateur entomologists and nature photographers that have participated in the action “Insect of the Year 2008” and have provided information on the distribution of the colour-winged Oedipodinae in Lithuania.

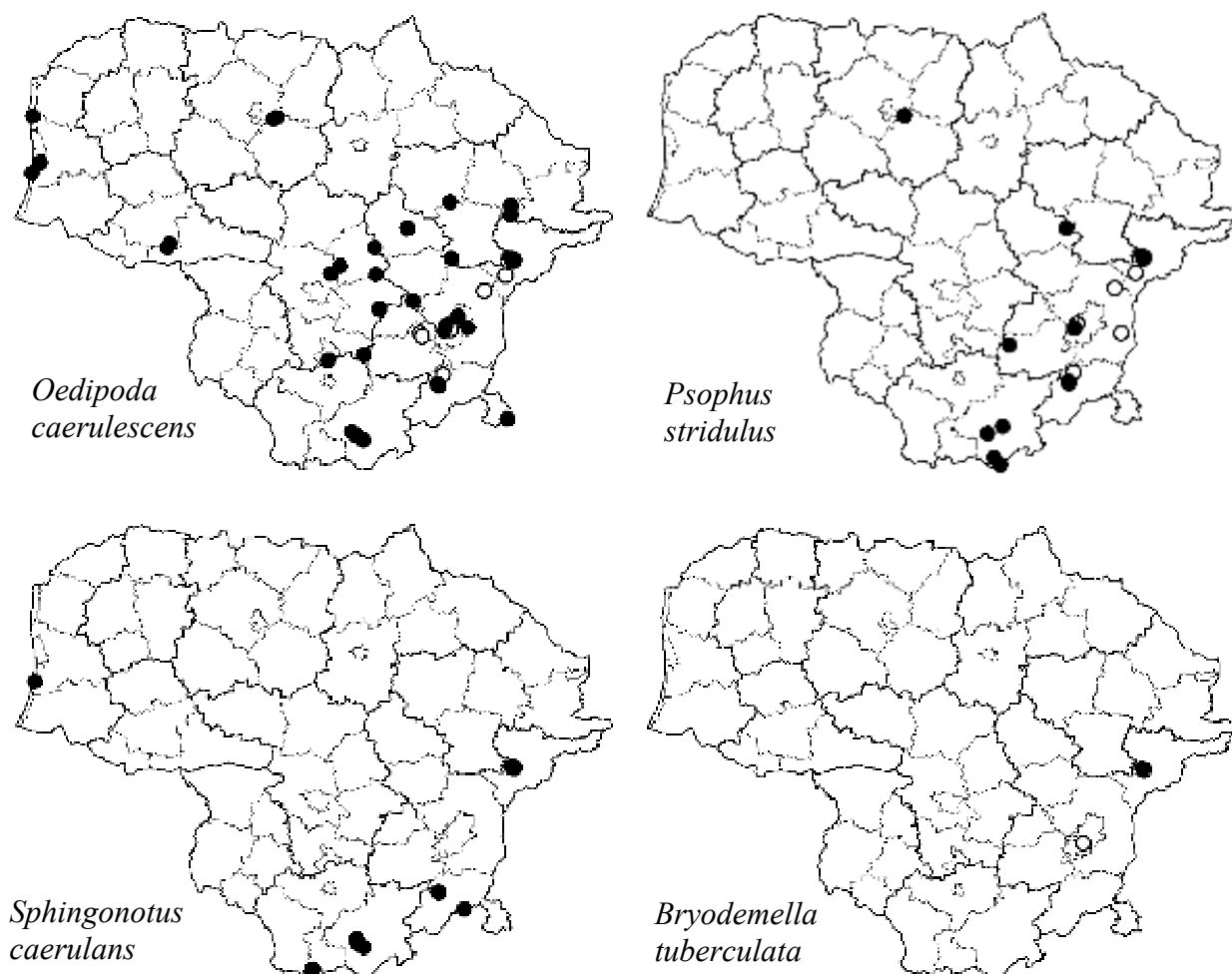


Figure 1. Distribution of four Oedipodinae species in Lithuania. Open circles – records before 1950.

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**Keturių tarkšlių rūšių (Orthoptera: Acrididae: Oedipodinae) paplitimas Lietuvoje***E. BUDRYS, V. BAČIANSKAS, A. BUDRIENĖ, D. DAPKUS, G. ŠVITRA, T. ŪSAITIS***Santrauka**

Pateikiami Lietuvos entomologų draugijos akcijos "Metų vabzdys 2008" rezultatai. Šios akcijos objektu buvo pasirinktos keturios šalyje aptinkamos tarkšlių rūšys. Surinkti nauji duomenys apie šių rūšių paplitimą Lietuvoje. Plačiausiai paplitęs ir tinkamose smėlynų buveinėse gana gausus yra mėlynsparnis tarkšlys (*Oedipoda caerulea*), kuris neaptiktas tik šiaurinėje Lietuvos dalyje. Raudonsparnis tarkšlys (*Psophus stridulus*) paplitęs tik pietrytinėje Lietuvos dalyje. Kopinio tarkšlio (*Sphingonotus caeruleus*) populiacijos gyvena Kuršių nerijos Naglių rezervato pilkosiose kopose ir pietryčių Lietuvos smilpievėse ant kontinentinių kopų bei Pabradės ir Rūdininkų karinių poligonų dykvietėse. Svarbiausias akcijos rezultatas yra visoje Šiaurės ir Centrinėje Europoje nykstančio, Latvijoje ir Lenkijoje laikomo išnykusiu, margojo tarkšlio (*Bryodemella tuberculata*) populiacijos pakartotinis suradimas Pabradės kariniame poligone. Rekomenduojama šią rūšį įtraukti į Lietuvos raudonąją knygą (1 kategorija) ir imtis tokių apsaugos priemonių, kaip tinkamos buveinės palaikymas populiacijos gyvenamoje teritorijoje bei rūšies veisimas nelaisvėje ir įveisimas kitose tinkamose jai gyventi vietose, kaip antai Rūdininkų karinis poligonas ir Musteikos apylinkės (buvęs Pariečės karinis poligonas).

*Received: November 5, 2008*