

## *A New Seed Beetle Species to the Bulgarian Fauna: Bruchidius siliquastris, Delobel (Coleoptera: Chrysomelidae: Bruchinae)*

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**Abstract.** A seed beetle *Bruchidius siliquastris* DELOBEL, 2007 (Coleoptera: Chrysomelidae) was reared from ripe pods of *Cercis siliquastrum* (Fabaceae) in Bulgaria and this is the first record of the species to the Bulgarian fauna. New host plants of the bruchid species were established on the basis of material collected in Hungary: *Cercis occidentalis*, *Cercis chinensis* and *Cercis griffithii*. A rich hymenopteran complex associated with the seed beetle was reared and comments on it are presented.

**Key words:** *Bruchidius siliquastris*, Bruchinae, Hymenoptera, Bulgaria, Hungary, new associations.

### Introduction

Bruchids (Coleoptera: Chrysomelidae: Bruchinae) have a worldwide distribution, with the highest species diversity in tropical and subtropical zones (BOROWIEC, 1987). Seed beetles are of a great economic importance, because several species are serious pests of agricultural and stored products.

The genus *Bruchidius* SCHILSKY, 1905 consists of about 300 species, widespread in the Old World, but a few species were introduced outside their native area (KINGSOLVER, 2004). Host plants of most *Bruchidius* species in larval stage are legumes (Fabaceae) as well as Apiaceae and Asteraceae plants (BOROWIEC, 1987).

*Bruchidius siliquastris* DELOBEL, 2007 was found for the first time in Montpellier, France as a seed beetle of *Cercis siliquastrum* L. KERGOAT *et al.* (2007) described it, gave distributional information for China and

Hungary and supposed presence of the species in other European countries also. Later, YUS RAMOS *et al.* (2009a) recorded the species in Spain. YUS RAMOS *et al.* (2009b, c, d, 2010) gave notes and comments on the biology and described the pre-imaginal stages of the species.

The genus *Cercis* L. (Fabaceae: Caesalpinioideae) consists of up to ten species, native to North America, China, Central Asia and Europe (KERGOAT *et al.*, 2007). *C. siliquastrum* (Mediterranean redbud, Judas tree) is distributed in all temperate regions of the world as native or ornamental tree due to the beauty of its flowers. KERGOAT *et al.* (2007) discussed on the most likely origin of *Bruchidius siliquastris* and possible recent shift from Oriental species of *Cercis* as hosts toward *C. siliquastrum*.

In this paper, *Bruchidius siliquastris* is recorded for the first time from Bulgaria.

New host plants - *Cercis occidentalis* TORR. EX A. GRAY, *Cercis chinensis* BUNGE and *Cercis griffithii* BOISS are established. Comments on a parasitoid complex reared together with the seed beetle are presented.

### Material and methods

Ripe pods of *C. siliquastrum* were collected in 2009 and 2010 in Plovdiv, Hissar and Kardzhali (Bulgaria). Pods of *C. siliquastrum*, *C. occidentalis*, *C. chinensis* and *C. griffithii* were collected from 2005 to 2007 from Budapest, Sopron, Kecskemét, Telki, Nagykanizsa, Szombathely and Vácrtót (Hungary). The material was stored at laboratory conditions (18–22° C) in plastic boxes until emergence of *Bruchidius siliquastrum* and parasitoids.

### Results and Discussion

Adults of *Bruchidius siliquastrum* were reared from *Cercis siliquastrum* pods collected in Bulgaria and Hungary. The seed beetle infested three further *Cercis* species: *C. occidentalis* (4.X.2007, Sopron, University of West Hungary, Botanical Garden, leg. G. Lunk); *C. chinensis* (12.XI.2007, Sopron, University of West Hungary, Botanical Garden, leg. G. Lunk), and *C. griffithii* (12.III.2007, 9.X.2007, Vácrtót, Institute of Ecology and Botany of Hungarian Academy of Sciences, Botanical Garden, leg. G. Lunk).

During the study, we reared the following hymenopterans belonging to four families of Chalcidoidea (Pteromalidae, Eupelmidae, Eurytomidae and Eulophidae), and Ceraphronidae and Braconidae families, together with *Bruchidius siliquastrum*.

#### Material:

**Bulgaria:** Plovdiv, 10.II.2010, *Dinarmus acutus* (THOMSON, 1878) (11 ♂♂, 6 ♀♀), ex *C. siliquastrum* (A. Stojanova).

**Hungary:** Budapest, 1.XII.2005, *Eupelmus urozonus* (DALMAN, 1820) (2 ♂♂, 10 ♀♀), *D. acutus* (5 ♂♂, 5 ♀♀), *Mesopolobus* sp. (1 ♂), *Bruchophagus* sp. (1 ♂), ex *C. siliquastrum* (Z. György); 23.III.2006, *E. urozonus* (4 ♂♂, 5 ♀♀), *D. acutus* (1 ♀), ex *C. siliquastrum* (Z. György); 26.IX.2006, *E. urozonus* (5 ♂♂, 8 ♀♀), *D. acutus* (34 ♂♂, 33 ♀♀), ex *C. siliquastrum*

(Z. György); 2.II.2007, *E. urozonus* (9 ♂♂, 11 ♀♀), *D. acutus* (1 ♂, 3 ♀♀), ex *C. siliquastrum* (K. Kovács); Kecskemét, 18.VII.2006, Ceraphronidae gen. et sp. (1 ♀), ex *C. siliquastrum* (Á. Szentesi, M. Tuda, Z. György); Sopron, University of West Hungary, Botanical Garden, 12.XI.2007, *E. urozonus* (1 ♀), ex *C. chinensis* (G. Lunk); Telki, 28.IV.2006, *E. urozonus* (6 ♂♂, 6 ♀♀), *D. acutus* (30 ♂♂, 28 ♀♀), *Bruchophagus* sp. (1 ♂, 1 ♀), Braconidae gen. et sp. (1 ♀), Ceraphronidae et gen. sp. (1 ♂), ex *C. siliquastrum* (A. Bartha); Vácrtót, Institute of Ecology and Botany of Hungarian Academy of Sciences, Botanical Garden, 9.X.2007, *E. urozonus* (6 ♂♂, 4 ♀♀), *D. acutus* (10 ♂♂, 8 ♀♀), *Mesopolobus* sp. (1 ♂), Eulophidae gen. et sp. (1 ♀), ex *C. griffithii* (G. Lunk); Nagykanizsa, 2.IX.2007, *E. urozonus* (2 ♂♂, 3 ♀♀), *D. acutus* (8 ♂♂, 10 ♀♀), *Mesopolobus* sp. (1 ♀), Eulophidae gen. et sp. (1 ♂), Tetrastichinae gen. et sp. (1 ♀), ex *C. siliquastrum* (G. Lunk); Szombathely, 25.IX.2007, *E. urozonus* (2 ♂♂, 5 ♀♀), *D. acutus* (10 ♂♂, 14 ♀♀), ex *C. siliquastrum* (R. Dankovics, K. Vig).

Newly recorded host plant associations of *Bruchidius siliquastrum* with *C. occidentalis* (California or Western Redbud, native to California), *C. chinensis* (Chinese redbud, native to Eastern Asia) and *C. griffithii* (Afghan Redbud, native to Southern Central Asia) reveal that the seed beetle is oligophagous on *Cercis* species.

The reared hymenopteran complex consists of *Dinarmus acutus* and *Mesopolobus* sp. (Pteromalidae), *Eupelmus urozonus* (Eupelmidae), *Bruchophagus* sp. (Eurytomidae), Eulophidae gen. et sp., Ceraphronidae gen. et sp. and Braconidae gen. et sp.

*D. acutus* is known to be a parasitoid of *Bruchus lentis*, *B. gilvovus* and *B. lividimanus* in Algeria and Italy (GRAHAM, 1969). NOYES (2003) summarized the published data and gave six species of the genus *Bruchidius*, one species of *Acanthoscelides*, eight species of *Bruchus* and one species *Callosobruchus* as hosts. YUS RAMOS *et al.* (2009d) reported *D. acutus* and *Dinarmus italicus* (MASI, 1922) as parasitoids of *Bruchidius siliquastrum* in Spain, where they found very high level of

parasitism (38%) of both species. Among all reared hymenopterans in our material, *D. acutus* represents 69% (219 specimens) and it could be a serious factor affecting the population dynamics of the seed beetle.

*Eupelmus urozonus* is a polyphagous parasitoid and hyperparasitoid of a considerable number of species of Coleoptera, Diptera, Hemiptera, Hymenoptera and Lepidoptera (NOYES, 2003). This is the first record of its association of the species with *Bruchidius siliquastris*. Taking into consideration of the wide range of hosts of *E. urozonus*, its presence in our reared material is not unexpected.

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