



Original article (Orijinal araştırma)

Flea beetles collected from olive trees of Antalya Province, including the first record of the monotypic genus *Lythraria* Bedel, 1897 (Coleoptera: Chrysomelidae) for Turkey¹

Monotipik cins *Lythraria* Bedel, 1897'nin Türkiye için ilk kaydı ile birlikte Antalya ilindeki zeytin ağaçlarından toplanan yaprak pire böcekleri

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Summary

Lythraria Bedel is a monotypic genus of leaf beetles in the tribe Alticini (Chrysomelidae: Galerucinae), with its unique species *Lythraria salicariae* (Paykull, 1800) distributed across the Palearctic ecozone. *Lythraria salicariae* was recorded for the first time from Turkey during field sampling conducted in olive grove areas of various regions in the Antalya Province. A total of 26 flea beetle species classified in 10 genera were collected by beating from olive trees, including *L. salicariae*. This contribution adds taxonomic and zoogeographic knowledge about *L. salicariae*, and brings the actual number of flea beetle species reported in Turkey to 345 across 23 genera.

Keywords: Alticini, Antalya, *Lythraria*, new record, olive trees, Turkey

Özet

Yaprak böceklerinin Alticini (Chrysomelidae: Galerucinae) tribusuna ait monotipik bir cins olan *Lythraria* Bedel, Palearktik bölgede yayılış gösteren tek bir türe, *L. salicariae* (Paykull, 1800), sahiptir. Antalya ilinin farklı bölgelerindeki zeytin bahçelerinde gerçekleştirilen örnekleme sırasında, *Lythraria salicariae* Türkiye için ilk kez kaydedilmiştir. *Lythraria* ile birlikte toplam 10 cins'e ait 26 yaprak pire böceği türü zeytin ağaçlarından darbe yöntemiyle toplanmıştır. Bu çalışmayla *Lythraria salicariae*'nin taksonomik ve zoocoğrafik verilerine yeni katılımlar sağlanmış, ayrıca Türkiye'den rapor edilen toplam yaprak pire böceği tür sayısı 23 cins'e ait 345 tür olarak güncellenmiştir.

Anahtar sözcükler: Alticini, Antalya, *Lythraria*, yeni kayıt, zeytin ağaçları, Türkiye

¹ This study includes some data from the second author's doctorate thesis

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Introduction

Alticini, known as flea beetles, is a very large and diverse tribe of leaf beetles within the subfamily Galerucinae according to the current classification of Chrysomelidae (Bouchard et al., 2011), with about 8,000 recognized species placed in more than 500 genera (Biondi & D'Alessandro, 2012; Nadein, 2015). This tribe of beetles (closely related to Galerucini) is distributed worldwide, mainly occurring in the tropical regions of Africa, Asia and South America (Konstantinov & Vandenberg, 1996; Santiago-Blay, 2004). They are mostly small, well known as phytophagous, whose thickened hind femora are generally used by taxonomists to distinguish this group from others. Most of the species are mono- or oligophagous, and the entire genera are more or less specialized as feeders on stems, leaves and roots of most higher plant families. Many members are harmful agricultural pests while several species are beneficial as biological control agents of weeds (Jolivet & Hawkeswood, 1995; Jolivet & Verma, 2002). Consequently, this group is commonly studied in different regions of the world using different collecting methods. Currently, 344 species of Alticini from 22 genera are known to occur in Turkey (Aslan & Alkan, 2015; Bayram & Aslan, 2015) of which about 11% are endemic.

This report arose from an ongoing agricultural study carried out in some olive orchards of Antalya province in order to determine harmful and beneficial insect species, and to search the population fluctuations of the important ones. Among the collected insects, chrysomelids were identified by the first author and unexpectedly one of them, *Lythraria salicariae* (Paykull, 1800), was determined as new record for Turkish fauna.

Lythraria Bedel 1897 is a monotypic genus of flea beetles in the tribe Alticini (Chrysomelidae: Galerucinae) containing *Lythraria salicariae* (Paykull 1800) found across the Palearctic ecozone (Europe, Caucasus, Siberia, Russian Far East, Japan) (Konstantinov & Vandenberg, 1996). A list of flea beetles collected by beating from olive trees is provided here including the first record of the genus *Lythraria* from Turkey. This contribution brings the current number of Turkish Alticini fauna to 345 species in 23 genera.

Materials and Methods

Flea beetle specimens were gathered from different localities in Antalya Province, Turkey during 2013-2015. The specimens were collected from olive trees by beating on a sheet with a stick. They were then taken to the laboratory for further analysis and dissection. The specimens were identified to species by the first author under an Olympus SZ61 stereomicroscope using the taxonomic keys and figures given by Konstantinov (1998), Čížek & Doguet (2008), Warchalowski (2010). Female genitalia and habitus of the new record were photographed with a digital camera attached to Leica Z16 APO stereomicroscope. All specimens are deposited in the personal collection of the first author at Department of Biology, Süleyman Demirel University, Turkey.

Results

A total of 108 individuals belonging to 26 species of Alticini in 10 genera, including a new genus record for the Turkish fauna, were identified. The species are listed in Table 1, including collection date, location, and number of individuals. General information on the new record is provided below.

Table 1. Twenty six species of Alticini (Chrysomelidae: Galerucinae) collected by beating from olive grove areas in Antalya Province, Turkey

Species	Collection date and locality	Number of specimens
<i>Altica lythri</i> Aubé, 1843	27.04.2013, Gazipařa	2
<i>Aphthona fuentei</i> Reitter, 1901	06.03.2014, Aksu	2
<i>A. nigriceps</i> (Redtenbacher, 1842)	01.05.2013, Serik; 23.04.2015, Aksu	6
<i>A. pygmaea</i> (Kutschera, 1861)	14.04.2014, Aksu; 30.04.2015, Serik	5
<i>A. warchalowskii</i> Fritzlari, 2001	13.10.2013, Manavgat	2
<i>Chaetocnema tibialis</i> (Illiger, 1807)	11.10.2013, Döřemealti	3
<i>Epitrix hirtipennis</i> (Melsheimer, 1847)	28.09.2013, Akseki	4
<i>Hermaphysa ruficollis</i> (Lucas, 1849)	06.04.2013; 13.05.2014; 13.09.2014, Aksu; 18.05.2013, Kumluca; 08.06.2013, Döřemealti; 28.09.2013, Gndođmuř; 13.10.2013, Manavgat	16
<i>Longitarsus albineus</i> (Foudras, 1860)	16.06.2013, Gazipařa	3
<i>L. luridus</i> (Scopoli, 1763)	06.03.2014; 28.03.2014, Aksu	4
<i>L. lycopi</i> (Foudras, 1860)	27.04.2013, Alanya	2
<i>L. nanus</i> (Foudras, 1860)	10.10.2013, Gebiz	2
<i>L. nimrodi</i> Furth, 1979	26.05.2014, Aksu	1
<i>L. ochroleucus</i> (Marsham, 1802)	11.06.2014, Aksu	2
<i>L. parvulus</i> (Paykull, 1799)	28.09.2013, Akseki	1
<i>L. pellucidus</i> (Foudras, 1860)	03.05.2013; 04.06.2014, Aksu; 13.10.2013, Manavgat	9
<i>L. succineus</i> (Foudras, 1860)	10.10.2013, Gebiz; 28.03.2014; 04.06.2014, Aksu	5
<i>Lythroria salicariae</i> (Paykull, 1800)	16.06.2013, Alanya	2
<i>Podagrica malvae</i> (Illiger, 1807)	10.10.2013, Serik; 13.05.2014, Aksu	3
<i>Phyllotreta variipennis</i> (Boieldieu, 1859)	01.09.2013, Kumluca	2
<i>Psylliodes anatolica</i> Gk & Ćilbiriđlu, 2004	01.05.2013, Serik; 03.05.2013, Aksu; 10.10.2013, Gebiz; 11.10.2013, Döřemealti	10
<i>P. cuprea</i> (Koch, 1803)	21.04.2014; 28.04.2014, Aksu	7
<i>P. isatidis</i> Heikertinger, 1912	28.04.2014; 25.07.2014; 30.04.2015, Aksu	9
<i>P. pallidicolor</i> Pic, 1903	06.03.2014, Aksu	1
<i>P. tricolor</i> Weise, 1888	05.05.2014; 24.06.2014, Aksu	3
<i>P. wrasei</i> Leonardi & Arnold, 1995	13.05.2014, Aksu	2

***Lythraria salicariae* (Paykull, 1800) (Coleoptera: Chrysomelidae)**

Material examined. Dim Çayı, Alanya, Antalya Province (36° 32' 14" N, 32° 05' 18" E), 14 m, 16.VI.2013, 2 ♀♀, leg. M. Başar.

Known distribution. *Europe*: Armenia, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Belarus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, The Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Serbia and Montenegro. *Asia*: East Siberia, Iran, Iraq, Japan, Kazakhstan, Mongolia, Korea. *North Africa*: not reported (Löbl & Smetana, 2010).

Distribution in Turkey. Antalya (new record from Turkey).

Diagnostic notes. Completely yellowish-brown; about 2.2-2.3 mm in length, upper sides finely and shallowly punctuate, elytral suture dark, punctures arranged in striae disappearing towards apical; spermatheca quite typical, especially in the structure and morphology of the ductus (Fig. 1).

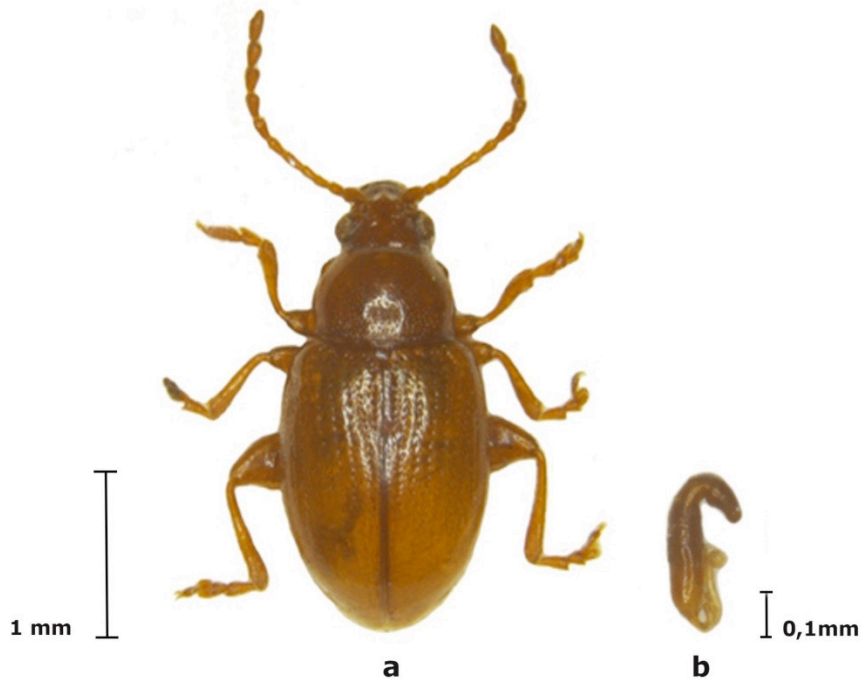


Figure 1. *Lythraria salicariae* (Paykull); a) habitus b) spermatheca.

Host plant information. Beetles were collected from an olive tree by beating method. The habitat was a neglected orchard along a roadside including olive and citrus fruit trees. It is not possible to conclude that olive trees were the host plant, as feeding and ovipositing were not observed. However, *Lysimachia vulgaris* L., *Lysimachia punctata* L. (Primulaceae) and *Lythrum salicaria* L. (Lythraceae) are reported as hosts for this species (Chatenet, 2002; Čížek & Doguet, 2008; Bukejs, 2009). Dolgovskaya et al. (2004) searched for potential biocontrol agents of purple loosestrife (*L. salicaria*), and listed four flea beetle species in their study including *L. salicariae*.

Discussion

Specimens of Alticini are generally collected either by sweep netting or by hand, but different collecting methods of this group have been applied in some recent studies (e.g. Flowers & Hanson, 2003; Furth et al., 2003; Linzmeier & Ribeiro-Costa, 2008; 2009; Aslan et al., 2012), especially those on the diversity of a particular area. Their direct association with herbaceous plants (and sometimes shrubs) makes the sweep netting more effective. However, it seems that different collecting methods such as beating and Malaise trapping clearly provide interesting catches for Alticini. It is not possible to conclude that olive trees were the actual host plants of the collected species. Most of them were collected in low numbers, and feeding activity was not recorded. It is possible that some were searching for temporary favorable environmental conditions, or were compelled to feed in a stress situation. For example, some species of *Psylliodes* have been observed on *Quercus* spp. (Fagaceae) without indication of feeding; only seeking for milder microhabitats (Aslan & Gök, 2006). Further studies with detailed observations are needed to understand presence of these beetles on olive trees, and the relationship between them. In a recent study conducted by Bayram & Aslan (2015) in the Aegean Region of Turkey, Alticini species composition, richness and abundance were studied comparatively in different habitats including also two different olive grove areas. However, because samplings were made from undergrowth vegetation using sweep-net, the authors did not record any species associated with olive trees.

As the present results show, alternative methods can be productive, and similar fieldwork using different collecting methods may give different results for species of Alticini. As a complement to sweep netting, it is likely that additional methods (as beating) can increase the efficiency of collection and species diversity of these beetles.

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