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Biological note (Biyolojik not)

Notes on *Otiorhynchus ovalipennis* Boheman (Coleopera: Curculionidae) feeding on sour cherry in Eskişehir, Turkey

Eskişehir' de vişnelerde beslenen *Otiorhynchus ovalipennis* Boheman (Coleopera: Curculionidae) ile ilgili notlar

Hikmet ÖZBEK[1]*

Summary

Occurrence of *Otiorhynchus ovalipennis* Boheman, 1842 (Coleoptera: Curculionidae: Entiminae) was recorded on sour cherry (*Prunus cerasus* L.) foliage in the orchards of Eskişehir in 2012. Its feeding habits and nature of damage were studied during the summers of 2013-2015. The adults appeared in the beginning of May and remained active throughout the summer until the middle of September. The adults showed nocturnal habit and fed at night, during the day time they remained on the ground or at the bottom of the trees. It was found to be an edge feeder; damaged leaves became irregularly shaped and left behind the veins of the leaves in some cases. The adults were also found damaging cherry leaves. Presumably, the adults over wintered in the dried plant refuge in the orchard.

Key words: *Otiorhynchus ovalipennis,* Curculionidae, sour cherry, pest, Turkey

Özet

Eskişehir'de bazı vişne bahçelerinde *Otiorhynchus ovalipennis* Boheman, 1842 (Coleoptera: Curculionidae: Entiminae)'in beslendiği 2012 yazında tespit edilmiştir. Bu zararlının beslenme ve zararı ile ilgili çalışmalar 2013-2015 sezonunda yapılmıştır. Erginler, mayıs başlarından itibaren ortaya çıkmakta, yaz boyunca beslenmelerini sürdürmekte ve bu durum eylül ortalarında sona ermektedir. Nokturnal davranışa sahip olan *O. ovalipennis,* aktivitesini gece sürdürmektedir. Beslenme, yaprak kenarlarından başlamakta ve zarar görmüş yapraklar düzensiz parçalı bir hal almaktadır. İleri hallerde sadece yaprak damarları kalmaktadır. Erginlerin kiraz yaprakları ile de beslendiği belirlenmiştir. Büyük olasılıkla erginler kışı yaprak döküntüleri arasında geçirmektedir.

Anahtar sözcükler: *Otiorhynchus ovalipennis,* Curculionidae, vişne, zararlı, Türkiye

[1] Department of Plant Protection, Faculty of Agriculture, Atatürk University, Erzurum, Turkey
*Sorumlu yazar (Corresponding author) e-mail: hozbek@atauni.edu.tr
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Introduction

During an ecological survey of orchards in Eskişehir Province a weevil was recorded to cause light to damage to the foliage of sour cherry in 2012. The adults were collected and determined as *Otiorhynchus ovalipennis* Boheman, 1842. A brief literature survey on the insect species was also undertaken. Considering the economic status of the insect, biological studies, both in laboratory and orchard, were conducted during spring and summer seasons of 2013- 2015.

Entiminae is one of the largest subfamilies of Curculionidae, occurring throughout the world (Magnano & Alonso-Zarazaga, 2013). The genus *Otiorhynchus* Germar, 1822, known as "Maymuncuklar" in Turkish, has a Palearctic distribution with numerous economically important species (Arnoldi et al., 1965; Booth et al., 1990). Magnano & Alonso-Zarazaga (2013) mentioned that 208 *Otiorhynchus* species were known from Turkey of which, *O. alexeevi* Korotyaev & Davidian, 2002; *O. leventi* Davidian & Yunakov, 2002; *O. oezbeki* Davidian & Yunakov, 2002; *O. temeli* Davidian & Gültekin, 2006; *O. karsavuran* Davidian & Gültekin, 2006; *O. korotyaevi* Davidian & Gültekin, 2006; *O. horasanicus* Davidian & Gültekin, 2007, *O. glebius* Davidian & Keskin, 2010 were recently described from Turkey (Davidian & Yunakov, 2002; Davidian & Gültekin, 2006, 2007; Davidian & Keskin, 2010). More recently, Davidian & Gültekin (2015) added *O. ege* to this list and number of *Otiorhynchus* species occurring in Turkey reached to 209. Different species of *Otiorhynchus* were reported feeding on various cultivated plants and inflicted considerable damage in Turkey (Lodos et al., 1978; Öncüer & Karagöz, 1995; Karagöz & Akşit, 1998; Altındişli et al., 2004; Keskin & Çevik 2007; Özbek et al., 2007).

Otiorhynchus ovalipennis (= *O. crucirostris* Hochhuth, 1851; *O. granithorax* Reitter, 1914) is the type species of the subgenus *Melasemnus* Reitter, 1912 from *Tournteria* subgenus complex (Magnano & Alonso-Zarazaga, 2013). *O. ovalipennis* is widely distributed in the western part of Palearctic Region, where is known from Balkans, Caucasus, Cyprus, Iran, Israel, Syria, south of Ukraine, and Turkey (Lodos et al., 1978; Keskin & Çevik 2007; Magnano & Alonso-Zarazaga, 2013).

Concerning to the damage caused by *O. ovalipennis* to the cultivated plants in the country there is not so far any published record as a sour cherry (*Prunus cerasus* L.) pest. However, Keskin (2005) in his theses (unpublished) gave some knowledge on type of damage of *O. ovalipennis* on sour cherry foliage. Additionally, in the faunal study on *Otiorhynchus* species conducted by Keskin & Çevik (2007) in İzmir Province *O. ovalipennis* was collected from various plant species, such as *Ligustrum vulgare* L., *Olea europaea* L., *Prunus amygdale*, *P. cerasus* L., *P. domestica* L., *P. persica*, *Morus alba* L., *Eriobotrya japonica* (Thunb.), *Cupressus sempervirens* L and *Rubus* sp. Moreover, Özbek & Çalmaşur (2005) noted that *O. ovalipennis* was observed in the northeastern part of Turkey on different species of *Rosa*. Similarly, in wild nature of Gobustan (arid territory SW of Baku in Azerbaijan) *O. ovalipennis* was common on *Cerasus microcarpa* (C.A. Mey) Boiss. (Personal communication from G. E. Davidian).

Results

Leaf eating insects include a great number of species of considerable diversity of structure. Frequent attempts were undertaken to find out the adults during day time but without any success. The same attempts were repeated during night the weevils were encountered. Collections were made by beating the branches of the trees. The field observations showed that the weevils appeared in the beginning of May on the foliage of sour cherry. The adults showed nocturnal habit and fed at night, during the day time they remained on the ground or at the bottom of the trees. At night the weevils climbed up the stem and ate tender foliage. Feeding of the weevils started at the edge of the leaves, fed in a typical way, whereby they chewed irregular-shaped areas from the margins of the leaves (Figure 1a). Because of consuming the edges damaged leaves became irregularly shaped. Feeding of the leaves continued irregularly leaving the veins and partly uneaten portions between veins (Figure 1b). In some instances the

leaf lamina was eaten, leaving the midribs. The activity of *O. ovalipennis* continued during the summer till the middle of September. In general, feeding occurred mainly on the leaves of the shoots at the base of the plants. In the upper parts of trees feeding was not observed, except in small trees. Additionally, damage caused to the host plant by the weevil was significant, particularly, on the border of the orchards.

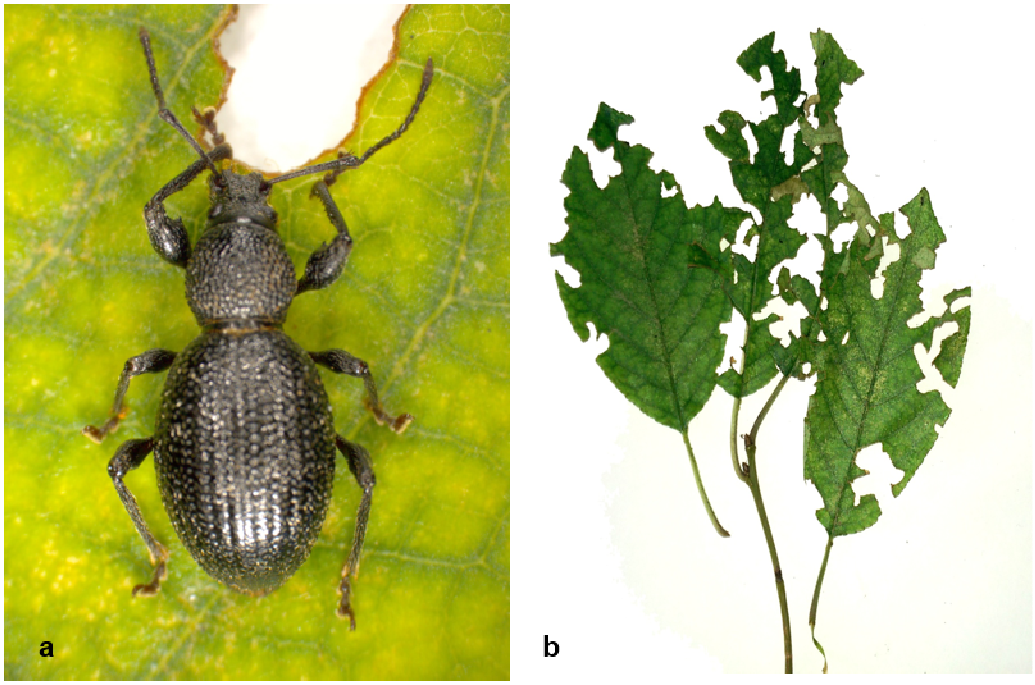

Figure 1. a. Adult of *Otiorhynchus ovalipennis* Boheman, 1842, b. Damage of on the leaves of sour cherry foliage.

Upon being disturbed, the weevil fell to the ground and feigned death for a short time before climbing back on the host plant. The female presumably oviposited in the soil and the larvae lived in the surface level of the soil near the roots of different host plants. The larvae and adults of *O. ovalipennis* showed different food preferences.

Both choice and no-choice tests involving the weevils and leaves from 4 plant species; sour cherry, cherry, apricot and plump trees were carried out in the laboratory to determine the food preference and damage rate of the weevil. In the choice test, one leaf from each plant was introduced into a glass jar with wet paper tissue at the bottom. Then four weevils were transferred into each jar, and the jars were kept in natural light at 20-22℃. Over a period of 10 days, the weevils consumed a significantly higher proportion of both sour cherry and cherry leaves. Similarly, no-choice test was conducted to determine damage rate of the weevil in each of the 4 plant species when no alternative host was available. For this purpose, the leaf from each plant was offered in separate jars, and all other procedures were the same as followed in the choice test. At the same period a little feeding was observed on the leaves of both plum and apricot whereas more feeding occurred on the leaves of sour cherry and cherry. Both of these tests revealed that in addition to sour cherry, *O. ovalipennis* also fed on the foliage of cherry.

In conclusion, present study and literature sources revealed that *O. ovalipennis* is widely distributed in Turkey, although it is primarily a polyphagous species, as many other *Otiorhynchus* species, gives considerable damage to sour cherry orchards in the country. It must be noted that presumably due to fact that adults having nocturnal habits and feed at night, growers not aware of the damage of the weevil.

As regards the control measures of this pest is concerned, spraying might not be very effective because of their nocturnal and crepuscular habit. Rather than insecticide application clean cultivation and removal of plant refuge during winter season could be usefully applied as a prophylactic measure.

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