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## ***Omaloelia spireae spireae* (Pallas) (Coleoptera: Scarabaeidae), a new pest of sea buckthorn, *Hippophae rhamnoides* L., in Turkey**

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**Abstract:** *Omaloelia (Acarina) spireae spireae* (Pallas, 1773) (Coleoptera: Scarabaeidae) was first detected as a pest of sea buckthorn (*Hippophae rhamnoides* L.) in Oltu, Erzurum province, in the summer of 2007. Adult *O. s. spireae* appeared toward the middle of July, fed on *H. rhamnoides* for approximately 3 weeks, and then disappeared at the end of the first week of August. They fed on the upper surface of the leaves and consumed epidermis and parenchyma tissue, mostly by making longitudinal holes of various shapes and lengths. In some instances the whole leaf lamina was eaten, leaving only the midrib. In time, the damaged leaves dried, turning first to gray, and then to a brownish color.

**Key words:** *Omaloelia spireae spireae*, Scarabaeidae, Melolonthinae, *Hippophae rhamnoides*, new host, new pest

### **Türkiye’de Yalancı İğde bitkisinde (*Hippophae rhamnoides* L.) yeni bir zararlı, *Omaloelia spireae spireae* (Pallas) (Coleoptera: Scarabaeidae)**

**Özet:** *Omaloelia (Acarina) spireae spireae* (Pallas, 1773) (Coleoptera: Scarabaeidae)’nin Yalancı İğde (*Hippophae rhamnoides* L.) bitkisinin yapraklarında beslendiği Oltu (Erzurum)’da 2007 yaz sezonunda tespit edilmiştir. *O. s. spireae* erginleri, temmuz ortalarına doğru Yalancı İğde yapraklarında toplu halde beslenmeye başlamakta; bu beslenme yaklaşık üç hafta kadar sürmekte, ağustosun ilk haftasından itibaren de buldukları yeri terk etmektedirler. Bitkinin yapraklarında üst epidermis ve parankima dokularını yiyerek çoğunlukla uzunlamasına deliklerin oluşmasına neden olmaktadır. Zamanla zarar görmüş yapraklar, gri, daha sonra da kahverengiye dönüşmekte, bazı yaprakları ise tamamen yenilmektedir.

**Anahtar sözcükler:** *Omaloelia spireae spireae*, Scarabaeidae, Melolonthinae, *Hippophae rhamnoides*, yeni konukçu, yeni zararlı

Sea buckthorn, *Hippophae rhamnoides* L. (Elaeagnaceae; known as “Yalancı İğde” in Turkish, and locally referred to as “Çişkan”), occurs as a wild plant predominantly along rivers, streams, irrigation canals, roadsides, and hillsides in wet soil, especially

in northeastern and central regions of Turkey. It has been used as fence and firewood by villagers, and, to a lesser extent, in ornamental plantings. It can rapidly develop an extensive root system and withstand low temperatures (-43 °C), making it an ideal plant for

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preventing soil erosion (Lu, 1992), which is a big problem in Turkey. Sea buckthorn berries have been traditionally consumed by people living in villages, but in recent years, sea buckthorn has attracted considerable attention internationally in horticulture, biochemistry, and pharmacology. This is because of the high content of biologically active substances in its berries, including: vitamin C, carotenoids, flavanoids, minerals and certain enzymes, and vitamins B1, B2, E, and K. Because of this high antioxidant capacity, the plant has become increasingly important (Li, 1996; Demir, 2005; Tiitinen et al., 2005; Ercişli et al., 2007). With the exception of Özbek et al. (1998) and Çoruh and Özbek (2002), there have not been any detailed studies on insects feeding on this plant in Turkey. They indicated that lackey moths, *Malacosoma neustria* (L.) and *Malacosoma franconica* (Denis et Schiffmüller) (Lepidoptera: Lasiocampidae), are important defoliators of *H. rhamnoides* in Erzurum province, but recorded no beetle defoliators. However, since the 1990s, this author has occasionally observed other forms of insect damage on the leaves of *H. rhamnoides* in Oltu district (Erzurum province), with this damage becoming more apparent along the narrow Sivri Valley (a tributary of Çoruh River), particularly in Başaklı (40°27'25.28''N, 41°48'01.70''E) and Çamlıbel (40°29'18.62''N, 41°45'41.54''E) villages. The insect species responsible for this feeding on *H. rhamnoides* was identified as *O. s. spireae* (Pallas, 1773) (Coleoptera: Scarabaeidae: Melolonthinae) (Figure 1).



Figure 1. An adult *Omaloplia spireae spireae* (Pallas).

*O. s. spireae* has a wide distribution area, including Armenia, Austria, Bulgaria, Czech Republic, Georgia, Greece, Kazakhstan, Romania, Russia, Slovakia, Turkey, and Ukraine (Rössner and Ahrens, 2004). Additionally, it has been recorded in many provinces in Turkey, including Ankara, Aksaray, Amasya, Antalya, Artvin, Aydın, Bolu, Bursa, Çankiri, Eskişehir, Erzincan, Erzurum, Gümüşhane, Isparta, İçel, İzmir, Kastamonu, Kayseri, Konya, Malatya, Muğla, Nevşehir, Niğde, Sinop, Sivas, Tokat, and Trabzon (Lodos, 1999; Rössner and Ahrens, 2004). Another subspecies *O. s. longiclava* (Baraud, 1965), is an endemic taxon known only from Rhodes Island (Greece) (Rössner and Ahrens, 2004).

While *O. s. spireae* is known to be a widespread species, there are very small amounts of data on host plants of the larvae and the adults, either in Turkey or any of the other countries in which it occurs. The only host record is by Lodos et al. (1999), who collected this species on *Onobrychis* sp., *Populus* sp., *Rubus* sp., and *Verbascum* sp., but they provided no information on feeding and plant damage.

After recognizing the damage from *O. s. spireae* on *H. rhamnoides*, observations were conducted during the summer of 2007 and 2008, beginning in July. Every 4 or 5 days, surveys were conducted and emergence of beetles was tracked. Feeding habits and damage caused by the beetles were recorded. *Omaloplia s. spireae* was detected, occurring sporadically in the field. The adults of *O. s. spireae* (up to 400 individuals) feed together on the leaves of *H. rhamnoides*. Upon being disturbed, the beetles fell to the ground, and remained inactive for a short time before climbing back onto the host plant.

The adults were active for approximately 3 weeks. In 2007, beetles first appeared on July 12 and disappeared on August 6. In 2008, these dates were July 9 and August 2, respectively. The beetles began feeding on one side of the *H. rhamnoides* stands and continued along the planted area. Each group of beetles infested an area of up to 15 m<sup>2</sup>, depending on the number of individuals. The beetles fed on the upper surface of the leaves and consumed epidermis and parenchyma tissues by making typically longitudinal holes in various shapes. In some instances, the whole leaf lamina was eaten, leaving only the midrib. In time, the damaged leaves dried,



Figure 2. Damage from *Omaloplia spireae spireae* (Pallas) on *Hippophae rhamnoides* L. a, b, c) Infested plants, d) Healthy plants.

turning first to gray, and then to a brownish color (Figure 2a, c). The damage caused to *H. rhamnoides* by *O. s. spireae* was generally significant, with a great deal of dried foliage being observed; the plants were weakened and the leaves of infected plants were completely dried, as were many twigs.

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