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Detection of harmful Curculionoidea (Insecta: Coleoptera) species in stone fruit trees of Kahramanmaraş, Adıyaman, Gaziantep provinces (Türkiye)

Kahramanmaraş, Adıyaman ve Gaziantep illeri sert çekirdekli meyve ağaçlarında zararlı Curculionoidea (Insecta: Coleoptera) türlerinin tespiti

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ABSTRACT

In this study, Curculionoidea (Insecta: Coleoptera) species were determined in Kahramanmaraş, Adıyaman and Gaziantep provinces 2022, in almond (*Amygdalus communis* L.), apricot (*Prunus armenica* L.), cherry (*Prunus avium* L.), sour cherry (*Prunus cerasus* L.), peach (*Prunus persica* L.), plum (*Prunus domestica* L.) trees. Visual inspection method, shoot removal method and impact method were applied to determine the species. Surveys were carried out weekly (once a week for the specified provinces) from the beginning of March to the end of October, considering the flowering periods of fruit trees. Based on the results, two species from Curculionoidea superfamily to the Rhynchitidae family; *Tatianaerhynchites aequatus* (Linnaeus, 1767), *Epihynchites* (*Colonnellinius*) *smyrnensis* (Desbrochers des Loges, 1869) and 11 species belonging to the Curculionidae family; *Anthonomus* (*Anthonomus*) *pyri* Boheman, 1843, *Tychius* (*Tychius*) *picirostris* (Fabricius, 1787), *Tychius* (*Tychius*) *breviusculus* Desbrochers, 1873, *Smicronyx* (*Smicronyx*) *jungermanniae* Reich, 1797, *Ceutorhynchus assimilis* Paykull, 1792, *Ceutorhynchus picitarsis* Gyllenhal, 1837, *Lixus* (*Dilixellus*) *vilis* (Rossi, 1790), *Polydrusus* (*Eustolus*) *ponticus* Faust, 1888, *Sitona macularius* (Marsham, 1802), *Sitona lineellus* (Bonsdorff 1785), *Myllocerus damascenus* Miller, 1861 a total of 13 species were identified. Among these species, *S. lineellus*, *C. assimilis*, *A. pyri*, *T. picirostris*, *T. breviusculus*, *T. aequatus* were determined to be the first record for Kahramanmaraş province, *T. aequatus*, *A. pyri*, *T. picirostris*, *T. breviusculus*, *S. jungermanniae* were determined to be the first record for Gaziantep province and *A. pyri*, *T. picirostris*, *T. breviusculus*, *S. jungermanniae*, *L. vilis* were determined to be the first record for Adıyaman province.

INTRODUCTION

Türkiye has many fruit species, genetic resources, and natural distribution areas since it has different climate characteristics and geographical locations (Polat and Kazankaya 2020). Stone fruits are located in the Rosales order in the Prunoideae subfamily of the Rosaceae family (Özçağıran et al. 2003). These fruits have economic value

in the temperate climate regions of the world (Şimşek et al. 2020). One of the most critical problems in fruit growing is plant protection problems. Insects are indispensable pests in orchards due to the number of species they have. Insects belonging to the superfamily Curculionoidea are the most important pests that cause economic damage to stone fruits. Most individuals belonging to Curculionoidea are polyphagous (Borror et al. 1989). More than one species can be found on parts of plants such as roots, stems, leaves, or fruits, and both larvae and adults of the same species can cause damage to the same plant (Mihajlova 1978). The studies conducted in our country by Lodos (1960) reported that *Polydrosus roseiceps* Pes. (Coleoptera: Curculionidae) is a polyphagous pest whose damage was observed in apples, apricots, plums, sour cherries, and cherries. They stated that the damage caused by *P. roseiceps* on almond trees in Elazığ and Mardin provinces was significant (Bolu and Özgen 2005, 2009, Maçan 1986). Bolu et al. (2005) stated that pistachio, almond, and cherry are the most important fruit species grown in the provinces of the GAP area. They identified 12 species of pistachio trees belonging to the Curculionoidea superfamily. Özbek (2016), in their study in Eskişehir, they determined that *Otiorhynchus ovalipennis* Boheman (1842) (Coleoptera: Curculionidae: Entiminae) fed on sour cherry and cherry trees. The study indicated that the feeding started from the leaf edges and the damaged leaves were broken irregularly. Öztürk and Ulusoy (2014) determined the damage type, damage rate and mechanical control effectiveness of *Polydrusus ponticus* Faust (Coleoptera: Curculionidae) in apricots in their study carried out in Malatya apricot orchards. Kahramanmaraş, Adıyaman, and Gaziantep provinces have more advantages than stone fruit growing provinces due to their location and climate conditions. The low effect of late spring frosts is especially important for almond and apricot cultivation. In this study, species belonging to the Curculionoidea superfamily that cause economic damage to fruits in stone fruit orchards were detected in almond, apricot, cherry, sour cherry, peach and plum.

MATERIALS AND METHODS

This study was carried out in 2022 in Kahramanmaraş, Adıyaman, and Gaziantep provinces to determine the species affiliated with the Curculionoidea superfamily. Periodic field exits were made weekly (once a week for the specified provinces) from the beginning of march to the end of october, considering the flowering periods of fruit trees. In the research, gardens that could best represent the study area were randomly selected and samples were taken.Sampling was done in 30 gardens in Kahramanmaraş, Adıyaman, and Gaziantep provinces, as given in Table 1. In addition, care was taken to visit different regions and gardens as much as possible during the sampling. Visual control, impact, and shoot removal methods were applied in species sampling.

Visual inspection method

Depending on the number of trees in the sampling garden, adults visible on the trunk, branches, shoots, leaves, and fruits of the plant were collected by hand or with a mouth aspirator and labeled by walking around each tree for 2-3 minutes. Those in the pre-adult stage were either cut with the plant organ they were located in or taken with forceps, brought to the laboratory with their food, and cultured to observe adult emergence.

Shooting method

Five shoot and branch samples were cut from different directions of the selected trees in the garden, brought to the laboratory in labeled and sealed polyethylene bags, examined with a stereo microscope, and the insects present were recorded.

Impact method

It is a method used to determine harmful and beneficial species on trees and was applied during vegetation. According to this method, the number of trees in the garden where the sampling would be done was taken as a basis. Trees were randomly selected in the garden, and one branch from each of the four directions was hit with a stick (40 cm) with a piece of plastic pipe on its end three times at the same speed, and the insects were allowed to fall into the Japanese umbrella. The samples falling, and then their positions were recorded, and then under the Japanese umbrella was transferred to polyethylene bags, labeled, and their positions recorded. Then, they were placed in an ice box and brought to the laboratory for examination. To reach a general conclusion about the population densities, the insects collected in the umbrella were evaluated according to the scale used by Maçan (1986). According to this scale, the number of samples belonging to a harmful species collected in the Japanese umbrella; if it varies between 1-5, it is considered low (insignificant); if it varies between 6-10, it is considered medium (be maybe necessary) and if it is 11 and above, it is considered high (important significant) (Table 3).

Laboratory studies

Sample bags brought to the laboratory were opened individually, flower samples were checked with a fine-

Table 1. Areas where the study was conducted and the number of sampled orchards in the stone fruit orchards of Kahramanmaraş, Adıyaman, and Gaziantep provinces

Province	Village/Town	Location	Number of gardens sampled
Kahramanmaraş	Sekamer	N37°35'28,975" E37°3'30,066"	1
	Tilkiler	N37°30'36" E37°27'13"	1
	Uzunsöğüt	N37°24'0,6289" E36°47'19,956"	2
		N37°23'35,554"E36°48'59,529"	
	Aşağımülk	N37°26'16,148"E37°30'43,459"	1
	Ulubahçe	N37°30'38,443" E37°22'41,760"	1
	Kozludere	N37°36'51,871 E37°6'27,905"	1
	Gani Dağı	N37°30'44,482"E37°25'10,578"	1
	Kümperli	N37°25'28,976"E36°40'1,6032"	1
	Salmanıpak	N37°25'50,924"E37°12'55,829"	1
	Dereköy	N37°34'46, 189" E37°2'26,443"	1
	KSÜ Kampüs	N37°35'20,914"E36°48'57,960"	2
		N37°35'35"0"E36°49'17.6"	
	Tekerek	N37°35'4,6950"E36°51'50,384"	1
	Demrek	N37°37'28,456"E36°38'32,543"	1
	Bulutoğlu	N37°39'54,938"E36°48'37,789"	4
		N37°38'54,328"E36°46'58,325"	
		N37°38'17,7"E38°46'02,9"	
		N37°38'17,7"E38°46'02,9"	
Gaziantep	Bilek	N37°07'43" E37°33'06"	1
	Yumurtacızade	N37°12'41,635"E37°29'8,4496"	1
	Serintepe	N37°15'59" E37°13'10"	1
	Yalnızbağ	N36°59'31,664"E87°27'41,552	1
	İkizkuyu 2	N36°57'56,529"E37°30'50,309	1
Adıyaman	Yukarçöplü	N37°45'54" E37°43'07"	1
	Şambayat	N37°41'39" E38°01'08"	1
	Şerefli	N37°07'43"E38°03'54"	1
	Kurugöl	N37°37'36N"E37°45'48"	1
	Tepecikli	N37°47'40"E38°04'09"	1
	Çatalağaç	N37°38'03"E37°30'15"	1
Total			30

tipped brush, and counts were performed. Adult individuals obtained from flowers during counts were examined under a stereo microscope and then killed in killing bottles containing potassium cyanide. Adult individuals obtained were pricked with insect needles, labeled, grouped according to order and family levels, placed in appropriate boxes, and made ready for identification.

RESULTS AND DISCUSSION

This study conducted to determine the species belonging to the Curculionoidea superfamily in Kahramanmaraş, Gaziantep, and Adıyaman provinces, two genera and two species belonging to the Rhynchitinae subfamily of the Rhynchitidae family, eight genera and eleven species belonging to the Curculioninae, Ceutorhynchinae, Lixinae, Entiminae subfamilies of the Curculionidae family were identified (Table 2). In addition, the identified species economically important and unimportant status was determined (Table 3).

Table 2. Species and host plants belonging to the Curculionoidea superfamily identified in Kahramanmaraş, Gaziantep, and Adıyaman provinces in 2022

Superfamily	Family	Subfamily	Species	Host plant
Curculionoidea	Rhynchitidae	Rhynchitinae	*Tatianaerhynchites aequatus* (Linnaeus, 1767)*,**,***	*Amygdalus communis* L.
			Epihynchites smyrnensis (Desbrochers des Loges, 1869) **	*Amygdalus communis* L.
	Curculionidae	Curculioninae	*Anthonomus pyri* Boheman, 1843 *	*Amygdalus communis* L.
			Tychius picirostris (Fabricius, 1787) *	*Prunus cerasus* L.
				Amygdalus communis L.
			Tychius breviusculus Desbrochers, 1873 *,***	*Prunus domestica* L.
				Amygdalus communis L.
				Prunus armeniaca L.
				Prunus avium L.
			Smicronyx jungermanniae Reich, 1797 *,***	*Prunus cerasus* L.
				Prunus avium L.
		Ceutorhynchinae	*Ceutorhynchus assimilis* Paykull, 1792 *	*Amygdalus communis* L.
				Prunus cerasus L.
			Ceutorhynchus picitarsis Gyllenhal, 1837 *	*Amygdalus communis* L.
		Lixinae	*Lixus vilis* (Rossi, 1790) *,**	*Amygdalus communis* L.
		Entiminae	*Polydrus ponticus* Faust, 1888 *	*Amygdalus communis* L.
			Sitona macularius (Marsham, 1802)*	*Amygdalus communis* L.
			Sitona lineellus (Bonsdorff 1785) *	*Amygdalus communis* L.
			Myllocerus damascenus Miller, 1861*	*Amygdalus communis* L.

*Kahramanmaraş, ** Adıyaman, ***Gaziantep

Table 3. Damage status of species belonging to the Curculionoidea superfamily detected in Kahramanmaraş, Gaziantep, and Adıyaman provinces in 2022 (1: important, 2: may be important, 3: insignificant)

Superfamily	Family	Species	Kahramanmaraş	Adıyaman	Gaziantep
Curculionoidea	Rhynchitidae	*Tatianaerhynchites aequatus* (Linnaeus, 1767)	1	1	2
		Epihynchites smyrnensis (Desbrochers des Loges, 1869)		3	
	Curculionidae	*Anthonomus pyri* Boheman, 1843	1		
		Tychius picirostris (Fabricius, 1787)	2		
		Tychius breviusculus Desbrochers, 1873	1		3
		Smicronyx jungermanniae Reich, 1797	1		2
		Ceutorhynchus assimilis Paykull, 1792	1		
		Ceutorhynchus picitarsis Gyllenhal, 1837	3		
		Lixus vilis (Rossi, 1790)	3	3	
		Polydrus ponticus Faust, 1888	1		
		Sitona macularius (Marsham, 1802)	3		
		Sitona lineellus (Bonsdorff 1785)	3		
		Myllocerus damascenus Miller, 1861	1		

Family: Rhynchitidae Gistel, 1848

Subfamily: Rhynchitinae Gistel, 1856

Tribus: Rhynchitini Gistel, 1856

Genus: *Tatianaerhynchites* Legalov, 2002

Species: *Tatianaerhynchites aequatus* (L., 1767)

Material examined: Kahramanmaraş/Dulkadiroğlu Sekamer Village, N37°35'28,975" E37°3'30,066", 31.03.2022, *Amygdalus communis* L. (almond), number of samples: 8♀, 7♂; Kahramanmaraş/Pazarcık Tilkiler Village, N37°30'36" E37°27'13", 09.IV.2022, *Amygdalus communis* L. (almond), number of samples: 4♀, 1♂; Adıyaman/Besni Şambayat Village, N37°41'39" E38°01'08", 09.IV.2022, *Amygdalus communis* L. (almond), number of samples: 14♀; Gaziantep/Şehitkamil Bilek Village, N37°07'43" E37°33'06", 10.IV.2022, *Amygdalus communis* L. (almond), number of samples: 2♀, 5♂ (Figure 1).

Distribution in Türkiye: Diyarbakır, Elazığ, Mardin, Siirt, Şanlıurfa, Adıyaman, Manisa, Muğla (Bolu and Özgen 2005, Bolu et al. 2005, Bolu 2006, Bolu and Legalov 2008, Bolu 2016, Tolga and Yoldaş 2020).

Genus: *Epirhynchites* Voss, 1953

Species: *Epirhynchites* (*Colonnellinius*) *smyrnensis* (Desbrochers des Loges, 1869)

Material examined: Adıyaman/Gölbaşı Yukarıçöplü Village, N37°45'54" E37°43'07", 09.IV.2022, *Amygdalus communis* L. (almond), number of samples: 3♀ (Figure 2).

Distribution in Türkiye: Ankara, Antalya, Bilecik, Bursa, Balıkesir, Diyarbakır, Edirne, Elazığ, Hatay, İzmir, Kırklareli, Kırşehir, Kapadokya, Kütahya, Malatya, Muğla, Mardin, Sivas, Isparta, Adıyaman, Batman, Gaziantep, Kilis, Siirt, Şanlıurfa, Şırnak, Toros, Tekirdağ and Uşak (Bodemeyer 1900, Lodos 1960, Voss 1969, Tüzün 1975, Maçan 1986, Erol and Önder 1991, Erol 1994, Bolu et al. 2005, Legalov and Friedman 2007, Bolu 2016).

Family: Curculionidae Latreille, 1802

Subfamilya: Curculioninae Latreille, 1802

Tribus: Anthonomini Thomson, 1859

Genus: *Anthonomus* Germar, 1817

Species: *Anthonomus* (*Anthonomus*) *pyri* Boheman, 1843

Material examined: Kahramanmaraş/Türkoğlu Uzunsöğüt Village, N37°24'0,6289"E36°47'19,956", 27.III.2022, *Amygdalus communis* L. (almond), number of samples: 3♀; Kahramanmaraş/Türkoğlu Uzunsöğüt2 Village, N37°23'35,554"E36°48'59,529", 31.III.2022 *Amygdalus communis* L. (almond), number of samples: 3♀, 4♂; Kahramanmaraş/Pazarcık Ulubahçe Village, N37°30'38,443"E37°22'41,760", 21.IV.2022, *Amygdalus communis* L. (almond), number of samples: 5♀, Kahramanmaraş/Dulkadiroğlu Sekamer, N37°35'28,975"E37°3'30,066", 28.IV.2022, *Amygdalus communis* L. (almond), number of samples: 7♀, 4♂ (Figure 3).

Distribution in Türkiye: Muğla and Manisa (Tolga and Yoldaş 2020).

Tribus: Tychiini C.G. Thomson, 1859

Genus: *Tychius* Germar, 1817

Species: *Tychius* (*Tychius*) *picirostris* (Fabricius, 1787)

Material examined: Kahramanmaraş/Dulkadiroğlu Kozludere Village, N37°36'51,871"E37°6'27,905", 28.IV.2022, *Prunus cerasus* L. (sour cherry) number of samples: 4♀; Kahramanmaraş/Türkoğlu Uzunsöğüt Village, N37°23'35,554"E36°48'59,529", 31.III.2022, *Amygdalus communis* L. (almond), number of samples: 3♀ (Figure 4).

Distribution in Türkiye: Diyarbakır, Mardin, Adana, Osmaniye, Ankara, Antalya, Çankırı, Konya, Sivas, Yozgat (Bolu 2016, Sert 2005).

Species: *Tychius* (*Tychius*) *breviusculus* Desbrochers, 1873

Material examined: Kahramanmaraş/Pazarcık Ganidağı Village, N37°30'44,482" E37°25'10, 578", 07.IV.2022, *Prunus domestica* L. (plum) number of samples: 3♂; Kahramanmaraş/Pazarcık Salmanıpak Village, N37° 25'50,924" E37°12'55,829", 21.IV.2022, *Amygdalus communis* L. (almond), number of samples: 5♂; Kahramanmaraş/ Dulkadiroğlu Sekamer, N37°35'28,975"E37°3'30,066", 28.IV.2022, *Prunus armeniaca* L. (apricot) number of samples: 1♂, 1♀; Kahramanmaraş/Onikişubat Kümperli Village, N37°25'28,976" E36°40'1,6032", 25.IV.2022, *Prunus avium* L. (cherry) number of samples: 2♂; Gaziantep/Şehitkamil Yumurtacızade Village, N37°12'41,635"E37°29'8,4496", 07.IV.2022, *Amygdalus communis* L. (almond), number of samples: 2♂ (Figure 5).

Distribution in Türkiye: Niğde, Manisa, Burdur, Isparta, Ankara, Eskişehir, Çankırı, Kayseri, Konya, Yozgat, Kırklareli, Uşak (Lodos et al. 1978, Sert and Çağatay 1999a, Tolga and Yoldaş 2020, Sert 2005).

Tribus: Smicronychini Seidlitz, 1891

Genus: *Smicronyx* Schoenherr, 1843

Species: *Smicronyx* (*Smicronyx*) *jungermanniae* Reich, 1797

Material examined: Kahramanmaraş/Onikişubat, Kahramanmaraş Sütçü Imam University Avşar Campus, N37°35'20,914"E36°48'57,960", 31.03.2022, *Prunus domestica* L. (plum) number of samples: 13♀; Gaziantep/ Şehitkamil Serintepe Village, N37°15'59"E37°13'10", 28.IV.2022, *Prunus avium* L. (cherry) number of samples: 7♀ (Figure 6).

Distribution in Türkiye: Konya, Nevşehir, Elazığ, Edirne, Muğla and Burdur (Lodos et al. 1978, Lodos et al. 2003, Kaplan and Yücel 2014, Forbicioni et al. 2019, Erbey and Bolu 2021).

Subfamily: Ceutorhynchinae Bedel, 1881

Tribus: Ceutorhynchini Gistel, 1848

Genus: *Ceutorhynchus* Germar, 1824

Species: *Ceutorhynchus assimilis* Paykull, 1792

Material examined: Kahramanmaraş/Onikişubat Kahramanmaraş Sütçü Imam University Avşar Campus, N37°35'20,914"E36°48'57,960", 31.03.2022, *Prunus domestica* L. (plum) number of samples: 3♀, 2♂; Kahramanmaraş/Dulkadiroğlu Dereköy Village, N37°34'46,189"E37°2'26,443", 31.III.2022, *Amygdalus communis* L. (almond), number of samples: 3♀, 1♂ (Figure 7).

Distribution in Türkiye: Trakya, Edirne, Erzincan, Erzurum, Tekirdağ, Ankara, İstanbul (Lodos et al. 1978, Sert 2005, Esentürk 2009, Gültekin 2001, Aydın and Hacet 2016).

Species: *Ceutorhynchus picitarsis* Gyllenhal, 1837

Material examined: Kahramanmaraş/Pazarcık Ulubahçe Village, N37°30'38,443"E37°22'41,760", 26.V.2022, *Amygdalus communis* L. (almond), number of samples: 3♀, 1♂ (Figure 8).

Distribution in Türkiye: Artvin, Erzurum, Edirne, Kars, Sivas, İstanbul, İzmir, Çanakkale, İzmir, Tekirdağ, Antalya, Bartın, Bitlis, İçel, Karaman, Kastamonu, Kırıkkale, Konya, Niğde, Ankara, Kayseri, Kırşehir, Sivas, Yozgat, Adana, Antalya, Burdur, Mersin, Niğde, Trabzon, Erzincan (Lodos et al. 1978, Sert 1995, Sert and Çağatay 1999, Lodos et al. 2003, Colonnelli 2004, Sert 2005, Gültekin 2001, Erbey 2010, Aydın 2013, Gürler 2014, Alaserhat 2019, Hacet and Colonnelli 2019, Gültekin 2020).

Subfamily: Lixinae Schoenherr, 1823

Tribus: Lixini Reitter, 1912

Genus: *Lixus* Fabricius, 1801

Species: *Lixus* (*Dilixellus*) *vilis* (Rossi, 1790)

Material examined: Kahramanmaraş/Onikişubat Tekerek District, N37°35'4,6950"E36°51'50,384", 31.III.2022, *Amygdalus communis* L. (almond), number of samples: 4♂; Adıyaman/Merkez Şerefli Village, N37°07'43"E38°03'54", 09.IV.2022, *Amygdalus communis* L. (almond), number of samples: 1♂ (Figure 9).

Distribution in Türkiye: Niğde, Afyon, Aydın, Çanakkale, Edirne, Kırklareli, Manisa, Muğla, Hatay, Aksaray, Ankara, Balıkesir, Bursa, İzmir, Kütahya, Mardin, Isparta (Lodos et al. 1978, Pehlivan et al. 2005, Erbey 2010, Demirözer and Karaca 2011, Tolga and Yoldaş 2020).

Subfamilya: Entiminae Schoenherr, 1823

Tribus: Polydrosini Champion, 1911

Genus: *Polydrusus* Germar, 1817

Species: *Polydrusus* (*Eustolus*) *ponticus* Faust, 1888

Material examined: Kahramanmaraş/Pazarcık Ulubahçe Village, N37°30'38,443" E37°22'41,760", 26.V.2022, *Amygdalus communis* L. (almond), number of samples: 9♀ 3♂; Kahramanmaraş/Dulkadiroğlu Sekamer Village, N37°35'28,975"E37°3'30,066", 25.V.2022, *Amygdalus communis* L. (almond), number of samples: 8♀ 1♂; Kahramanmaraş/Onikişubat Demrek, N37°37'28,456" E36°38'32,543", 06.VI.2022, *Amygdalus communis* L. (almond), number of samples: 2♀, 3♂ (Figure 10).

Distribution in Türkiye: Antalya, Ankara, Amasya, Afyon, Aydın, Aksaray, Adıyaman, Adana, Yozgat, Yalova, Uşak, Siirt, Samsun, Sakarya, Sinop, Samsun, Niğde, Mersin, Mardin, Manisa, Muğla, Malatya, Kütahya, Kocaeli, Kayseri, Kastamonu, Karabük, Karaman Kırklareli, Konya, Kırşehir, Kilis, Konya, Kahramanmaraş, İstanbul, İzmir, Isparta, Hatay, Giresun, Gaziantep, Elazığ, Eskişehir, Edirne, Diyarbakır, Denizli, Çorum, Çanakkale, Çankırı, Bursa, Burdur, Bolu, Bilecik, Bandırma, Bitlis, Balıkesir, Şırnak, Nevşehir, Osmaniye, Erzincan, Gümüşhane, Tekirdağ, Uşak, Zonguldak (Heyden and Faust 1888, Lodos 1960, Voss 1962, Balachowsky and Hoffmann 1963, Tuatay et al. 1972, Tüzün 1975, Lodos 1977, Lodos et al. 1978, Lodos et al. 1987, Çevik 1996, Tamer et al. 1997, Kaya 1999, Lodos et al. 2003, Erbey 2010, Ayaz and Yücel 2010, Kaplan and Yücel 2014, Öztürk and Ulusoy 2014, Tezcan et al. 2014, Yılmaz 2015, Alaserhat 2019, Kapucı 2019, Kaplan 2020, Ayaz 2021, Alaserhat and Bozbek 2021).

Tribus: Sitonini Gistel, 1848

Genus: *Sitona* Germar, 1817

Species: *Sitona macularius* (Marsham, 1802)

Material examined: Kahramanmaraş/Pazarcık Ulubahçe Village, N37°30'38,443" E37°22'41,760", 26.V.2022, *Amygdalus communis* L. (almond), number of samples: 3♀ (Figure 11).

Distribution in Türkiye: Ankara, Adana, Aksaray, Antalya, Adıyaman, Ağrı, Iğdır, Isparta, Ardahan, Afyon, Balıkesir, Bingöl, Bilecik, Bursa, Bolu, Bayburt, Bitlis, Denizli, Yalova, İzmir, Manisa, Muğla, Tekirdağ, Uşak, Elazığ, Erzincan, Erzurum, Edirne, Hakkari, Malatya, Muş, Tunceli, Van, Çankırı, Çorum, Çanakkale, Eskişehir, Gaziantep, Hatay, İçel, Kahramanmaraş, Karabük, Konya, Karaman, Kars, Kastamonu, Kütahya, Kayseri, Kilis, Kırıkkale, Kırklareli, Kırşehir, Konya, Nevşehir, Niğde, Osmaniye, Yozgat, Sivas, Diyarbakır, Şanlıurfa (Lodos et al. 1978, Sert and Çağatay 1994, Tamer et al. 1998, Lodos et al. 2003, Coşkuncu and Gencer 2010, Avgın and Colonnelli 2011, Bolu 2016, Erdem 2016, Çekiç 2017, Gözüaçık et al. 2021).

Species: *Sitona lineellus* (Bonsdorff 1785)

Material examined: Kahramanmaraş/Türkoğlu Uzunsöğüt Village, N37°24'0,6289" E36°47'19,956", 27.III.2022, *Amygdalus communis* L. (almond), number of samples: 1♀, 3♂ (Figure 12).

Distribution in Türkiye: Bartın, Kütahya, Edirne, Kars, Artvin, Adıyaman, Zonguldak, Çankırı, Kayseri, Yozgat (Lodos 1977, Lodos et al. 2003, Sert and Kabalak 2013, Delbol and Lempereur 2014).

Tribus: Cyphicerini Lacordaire, 1863

Genus: *Myllocerus* Schoenherr, 1823

Species: *Myllocerus damascenus* Miller, 1861

Material examined: Kahramanmaraş/Onikişubat Bulutoğlu Village, N37°39'54,938"E36°48'37,789", 02.VIII.2022, *Amygdalus communis* L. (almond), number of samples: 13♀, 7♂ (Figure 13).

Distribution in Türkiye: Adıyaman, Batman, Diyarbakır, Gaziantep, Mardin, Malatya Siirt, Şanlıurfa, Şırnak, Mersin, Adana, Antalya, Diyarbakır, Hatay, Kahramanmaraş, Mardin, Niğde, Osmaniye (Osella 1977, Lodos et al. 2003, Öztürk et al. 2004, Bolu and Legalov 2008, Erbey 2010, Avgın and Colonnelli 2011).

While *S. lineellus*, *C. assimilis*, *A. pyri*, *T. picirostris*, *T. breviusculus*, *T. aequatus* species were determined to be the

first record for Kahramanmaraş province, *T. aequatus*, *A. pyri*, *T. picirostris*, *T. breviusculus*, *S. jungermanniae* were determined to be the first record for Gaziantep province. *A. pyri*, *T. picirostris*, *T. breviusculus*, *S. jungermanniae*, *L. vilis* were determined to be the first record for Adıyaman province.

In addition, *T. picirostris* was first detected in sour cherry, *S. jungermanniae* in cherry, *T. breviusculus* in almond, cherry, plum, and apricot, *A. pyri* and *S. lineellus* in almond, *C. assimilis* in almond and plum.

It was determined that *T. aequatus*, *A. pyri*, *T. breviusculus*, *S. jungermanniae*, *C. assimilis* caused economic losses due to their population density in Kahramanmaraş province. It was observed that they caused damage to stone fruit trees during the flowering period and it was determined that they prevented fruit set as a result of feeding on the flower. *M. damascenus* and *P. ponticus* were found densely in the almond fields of Kahramanmaraş province and it was determined that they feed on the new leaves and young shoots of the almond tree. It was observed that they commonly feed by creating 2-3 cm semicircular holes starting from the leaf edges and then gnawing inwards along the leaf veins. Although it does not cause economic loss, it has been determined that it causes significant damage to the green parts of the almond tree.

As a result, this study has identified species belonging to the Curculionoidea superfamily that cause significant damage to stone fruit orchards in Kahramanmaraş, Adıyaman, and Gaziantep provinces and contributed to the Curculionoidea fauna of Türkiye. In addition, this study has formed the basis for future studies.

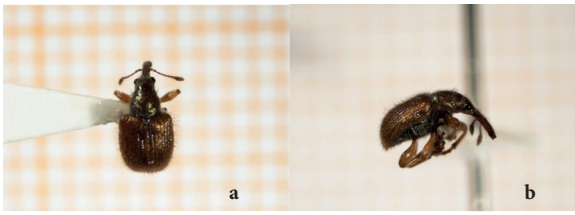

Figure 1. a) dorsal view b) lateral view of *Tatianaerhynchites aequatus* (Linnaeus, 1767)

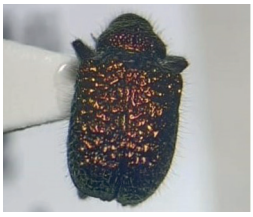

Figure 2. *Epihynchites* (*Colonnellinius*) *smyrnensis* (Desbrochers des Loges, 1869)

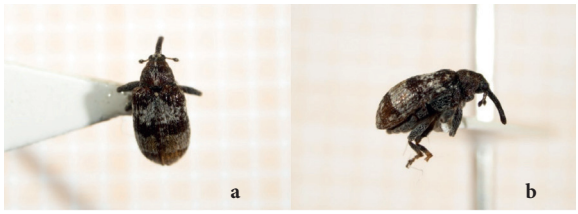

Figure 3. a) dorsal view b) lateral view of *Anthonomus pyri* Boheman, 1843

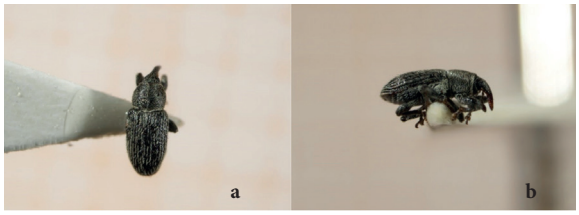

Figure 4. a) dorsal view b) lateral view of *Tychius picirostris* (Fabricius, 1787)

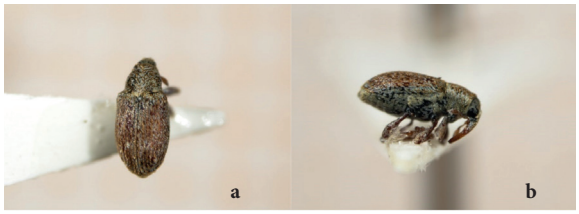

Figure 5. a) dorsal view b) lateral view of *Tychius breviusculus* Desbrochers, 1873

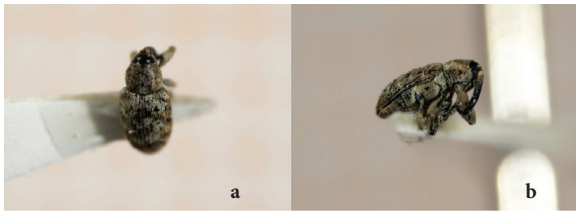

Figure 6. a) dorsal view b) lateral view of *Smicronyx jungermanniae* Reich, 1797

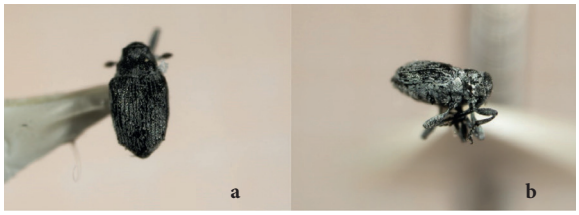

Figure 7. a) dorsal view b) lateral view of *Ceutorhynchus assimilis* Paykull, 1792

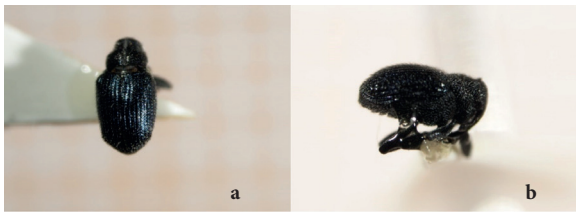

Figure 8. a) dorsal view b) lateral view of *Ceutorhynchus picitarsis* Gyllenhal, 1837

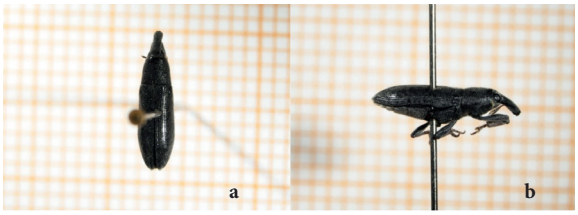

Figure 9. a) dorsal view b) lateral view of *Lixus vilis* (Rossi, 1790)

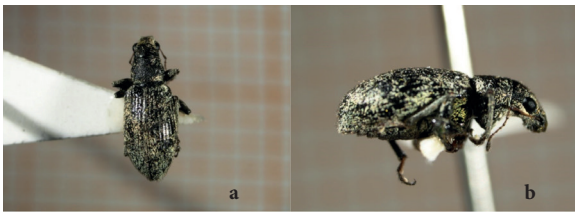

Figure 10. a) dorsal view b) lateral view of *Polydrus ponticus* Faust, 1888

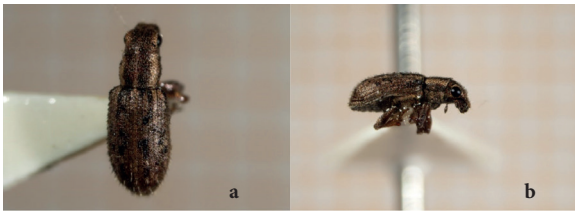

Figure 11. a) dorsal view b) lateral view of *Sitona macularius* (Marsham, 1802)

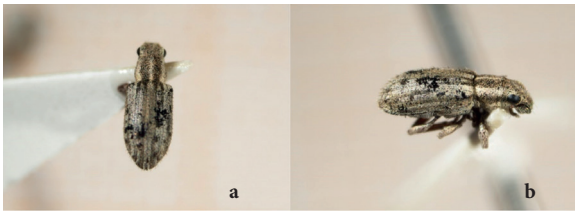

Figure 12. a) dorsal view b) lateral view of *Sitona lineellus* (Bonsdorff 1785)

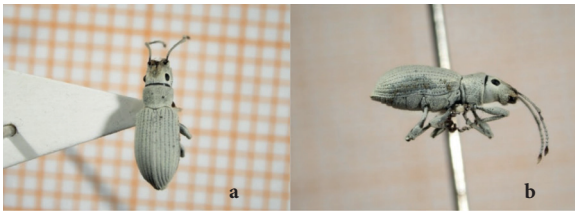

Figure 13. a) dorsal view b) lateral view of *Myllocerus damascenus* Miller, 1861.

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Author's Contributions

The authors have declared no conflict of interest.

Statement of Conflict of Interest

The authors have declared no conflict of interest.

ÖZET

Kahramanmaraş, Adıyaman ve Gaziantep illerinde 2022 yılında yapılan bu çalışma ile sert çekirdekli meyve ağaçları badem (*Amygdalus communis* L.), kayısı (*Prunus armenica* L.), kiraz (*Prunus avium* L.), vişne (*Prunus cerasus* L.), şeftali (*Prunus persica* L.), erik (*Prunus domestica* L.) de zarar yapan Curculionoidea (Insecta: Coleoptera) türleri saptanmıştır. Türlerin tespitinde gözle kontrol metodu, sürgün alma metodu ve darbe metodu uygulanmıştır. Sürveyler meyve ağaçlarının çiçeklenme dönemleri göz önünde bulundurularak mart başından - ekim sonuna kadar haftalık (belirtilen iller için haftada 1 kez) periyodik arazi çıkışları yapılmıştır. Çalışma sonucunda; Curculionoidea üst familyasından Rhynchitidae familyasına bağlı 2 tür; *Tatianaerhynchites aequatus* (Linnaeus, 1767), *Epihynchites* (*Colonnellinius*) *smyrnensis* (Desbrochers des Loges, 1869) ve Curculionidae familyasına bağlı 11 tür; *Anthonomus* (*Anthonomus*) *pyri* Boheman, 1843, *Tychius* (*Tychius*) *picirostris* (Fabricius, 1787), *Tychius* (*Tychius*) *breviusculus* Desbrochers, 1873, *Smicronyx* (*Smicronyx*) *jungermanniae* Reich, 1797, *Ceutorhynchus assimilis* Paykull, 1792, *Ceutorhynchus* picitarsis Gyllenhal, 1837, *Lixus* (*Dilixellus*) *vilis* (Rossi, 1790), *Polydrusus* (*Eustolus*) ponticus Faust, 1888, *Sitona macularius* (Marsham, 1802), *Sitona lineellus* (Bonsdorff 1785), *Myllocerus damascenus* Miller, 1861 olmak üzere toplam 13 tür tespit edilmiştir. Bu türlerden *S. lineellus*, *C. assimilis*, *A. pyri*, *T. picirostris*, *T. breviusculus, T. aequatus* türlerinin Kahramanmaraş ili için ilk kayıt, *T. aequatus*, *A. pyri*, *T. picirostris*, *T. breviusculus, S. jungermanniae* Gaziantep ili için ilk kayıt ve *A. pyri, T. picirostris*, *T. breviusculus, S. jungermanniae*, *L. vilis* Adıyaman ili için ilk kayıt olduğu belirlenmiştir.

Anahtar kelimeler: Curculionoidea, Kahramanmaraş, Adıyaman, Gaziantep, sert çekirdekli meyveler

REFERENCES

Alaserhat İ., 2019. Erzincan ili elma ağaçlarında bulunan zararlı ve faydalı böcek türleri ile bazı önemli zararlı türlerin doğada görülme zamanı. Avrupa Bilim ve Teknoloji Dergisi, 17, 1116-1124.

Alaserhat İ., Bozbek Ö., 2021. Erzincan ve Gümüşhane illeri kayısı ağaçlarında saptanan zararlı ve faydalı türler ve önemli olan zararlı türlerin doğada bulunma zamanı. Türk Tarım ve Doğa Bilimleri Dergisi, 8 (3), 642-654.

Avgın S., Colonnelli E., 2011. Curculionoidea (Coleoptera) from Southern Turkey. African Journal of Biotechnology, 10 (62), 13555-13597.

Ayaz T., 2021. Şırnak ili elma (*Malus domestica* Bark. (Rosaceae)) bahçelerinde bulunan zararlı ve yararlı Arthropod türlerinin belirlenmesi. Sirnak University, Journal of Sciences, 2 (2), 16-22.

Ayaz T., Yücel A., 2010. Elazığ İli Elma Alanlarında Bulunan Zararlı ve Yararlı Arthropod Türlerinin Belirlenmesi Üzerine Araştırmalar. Harran Üniversitesi Ziraat Fakültesi Dergisi, 14 (1), 9-16.

Aydın E., 2013. Edirne ili Ceutorhynchinae (Coleoptera: Curculionidae) faunasının taksonomik ve faunistik yönden araştırılması. Trakya Üniversitesi Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 81 s., Edirne.

Aydın E., Hacet N., 2016. Trakya Bölgesi'nden Ceutorhynchinae (Coleoptera: Curculionidae) faunasına ilave kayıtlar. Türkiye Entomoloji Bülteni, 6 (2), 101-110.

Balachowsky A., Hoffmann A., 1963. Famille des Attelabidae (pp. 1202-1237). In: Entomologie Applique a l'Agriculture. Tom. I- Coleopteres. volüme 2: Phytophagoidea (suite et fin). Balachowsky A.S., (Ed.). Masson and Cie, Paris, p. 1391.

Bodemeyer H.E., 1900. Quer durch klein-asien in den bulghar-dagh. die druck and verlags-aktien geselischaft vormals dölter. Emmendingen, 169 p.

Bolu H., 2006. A new host [*Tatianaerhynchites aequatus* (L.) Coleoptera: Rhynchitidae] record for *Bracon pectoralis* Wesmael, *Baryscapus bruchidii* (Erdös), *Eupelmus urozonus* Dalman, and *Exopristus trigonomerus* (Masi) from Turkey. Journal of the Entomological Research Society, 8 (3), 51-62.

Bolu H., 2016. Southeastern Anatolia region insect fauna I (Coleoptera II: Curculionoidea, Tenebrionoidea) of Turkey. Agriculture & Forestry, 62 (3), 73-91.

Bolu H., Legalov A.A., 2008. On the Curculionoidea (Coleoptera) fauna of almond (*Amygdalus communis* L.) orchards in South-Eastern and Eastern Anatolia in Turkey. Baltic Journal of Coleopterology, 8 (1), 75-88.

Bolu H., Özgen İ., 2005. Abundance and economic importance of the species of Curculionoidea superfamily on almond (*Amygdalus communis* L.) of Southeastern and Eastern Anatolia Regions. Journal of the Entomological Research Society, 7 (2), 51-58.

Bolu H., Özgen İ., 2009. Diyarbakır, Elazığ ve Mardin illeri badem ağaçlarında zararlı *Polydrosus roseiceps* Pes. (Coleoptera: Curculionidae)'nin popülasyon değişiminin belirlenmesi. Harran Üniversitesi Ziraat Fakültesi Dergisi, 13 (2), 43-47.

Bolu H., Yücel A., Özgen İ., 2005. GAP alanındaki illerde meyve ağaçlarında zararlı Curculionoidea (Coleoptera) türleri üzerinde bir değerlendirme. GAP IV. Tarım Kongresi, 280-283.

Borror D.J., Triplehorn C.A., Johnson N.F., 1989. An introduction to the study of insects. Saunders College Publishing, Philadelphia, 875 pp.

Colonnelli E., 2004. Catalogue of Ceutorhynchinae of the world, with a key to genera (Insecta: Coleoptera) Curculionidae). Barcelona: Argania editio, 124 pp.

Coşkuncu K., Gencer N., 2010. Determination of the species of Curculionoidea superfamily on alfalfa fields (*Medicago sativa* L.) and their distribution in Bursa province of Turkey. Bursa Uludağ Üniversitesi Dergileri, 4 (12), 123-131.

Çekiç S., 2017. Doğu Anadolu Bölgesi'ndeki *Sitona* Germar (Coleoptera: Curculionidae) türleri üzerinde faunistik ve sistematik araştırmalar. Atatürk Üniversitesi Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 61 s., Erzurum.

Çevik T., 1996. Orta Anadolu Bölgesi ceviz ağaçlarında zararlı ve faydalı faunanın tespiti üzerinde araştırmalar. Bitki Koruma Bülteni, 36 (1-2), 55-72.

Delbol M., Lempereur J.M., 2014. Apport a la Connaissance des Sitonini de Belgique (Curculionidae: Entiminae). Entomologie Faunistique-Faunistic Entomology, 67, 15-25.

Demirözer O., Karaca İ., 2011. Isparta ili yağ gülü, *Rosa damascena* Miller, alanlarında bulunan fitofag Arthropod türleri ve önemlilerinin yayılışları. Süleyman Demirel Universitesi Journal of Science (E-Journal), 6 (1), 9-25.

Erbey M., 2010. Bolkar Dağlarının Curculionidae (Coleoptera) familyası üzerinde taksonomik ve morfolojik araştırmalar. Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Doktora Tezi, 460 s., Ankara.

Erbey M., Bolu H., 2021. Taxonomic notes on *Smicronyx* Schoenherr, 1843 (Coleoptera: Curculionidae) from Turkey. Journal of Entomological Science, 56 (2), 210-216.

Erdem E., 2016. Kırşehir ili Akçakent ilçesi Curculionidae (Coleoptera) familyası üzerinde taksonomik ve morfolojik araştırmalar. Gazi Üniversitesi Fen Bilimleri Enstitüsü, Biyoloji Anabilim Dalı, Yüksek Lisans Tezi, 120 s., Kırşehir.

Erol T., 1994. Türkiye Attelabidae (Coleoptera) familyası türleri üzerinde faunistik ve sistematik çalışmalar II (Rhynchitinae: Rhynchitini). Türkiye Entomoloji Dergisi, 18 (2), 89-102.

Erol T., Önder F., 1991. İzmir ilinde Attelabidae (Coleoptera) familya türleri, tanınmaları, konukçuları ve yayılışları üzerinde araştırmalar. Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 2 (1), 173-181.

Esentürk N., 2009. Tekirdağ ilinde kanolada zararlı *Ceutorhynchus assimilis* Paykull. 'a beta cyflutrin ve acetamiprid'in etkileri üzerinde araştırmalar. Namık Kemal Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 1-33., Tekirdağ.

Forbicioni L., Abbazzi P., Bello C., Colonnelli E., Osella G., 2019. The Curculionoidea of the Tuscan Archipelago, Italy (Coleoptera). Biodiversity of the Mediterranean Basin. I. Tuscan Archipelago (Coleoptera, Curculionoidea). Memoirs on Biodiversity, 4, 71-281.

Gözüaçık C., Gültekin N., Velazquez de Castro A.J., 2021. Yonca (*Medicago sativa* L.) tarımı yapılan alanlarda *Sitona* Germar 1817 (Coleoptera: Curculionidae) türleri, dağılımları ve popülasyon gelişimleri: Türkiye, Iğdır ili yonca alanları. The Turkish Journal of Agriculture and Forestry, 8 (2), 184-191.

Gültekin L., 2001. Kuzeydoğu Anadolu Bölgesi Ceutorhynchinae Gistel (Coleoptera: Curculionidae) türleri üzerinde faunistik ve sistematik çalışmalar. Atatürk Üniversitesi, Fen Bilimleri Enstitüsü, Doktora Tezi, 185 s., Erzurum.

Gültekin N., 2020. Leaf-litter inhabitant weevils (Coleoptera: Curculionidae) in a small forest refuge fragment among hazelnut orchards at Trabzon. International Journal of Agriculture, Environment and Food Sciences, 4 (4), 507-512.

Gürler Y., 2014. Beypazarı (Ankara) Curculionidleri (Coleoptera: Curculionidae). Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 135 s., Ankara.

Hacet N., Colonnelli E., 2019. On the Ceutorhynchinae (Coleoptera: Curculionidae) Fauna of turkish thrace, with additional records for Turkey. Journal of the Entomological Research Society, 21 (2), 175-183.

Heyden M.D.L., Faust J., 1888. Beitrage zur Kleinasiatischen Coleopteren- Fauna. Deutsche Entomologische Zeitschrift, 1, 45-47.

Kaplan M., 2020. Malatya ili elma (*Malus domestica* Bark. (Rosaceae)) ağaçlarında zararlı böcek ve akar türleri ile doğal düşmanlarının belirlenmesi. Iğdır Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 10 (4), 2341-2352.

Kaplan M., Yücel A., 2014. Elazığ ili çilek alanlarında belirlenen zararlı böcek ve akar türleri. Meyve Bilimi Dergisi, 1 (2), 7-14.

Kapucı Ş., 2019. Bitlis Adilcevaz ilçesi Curculionidae (Coleoptera) familyası üzerinde taksonomik ve morfolojik araştırmalar. Kırşehir Ahi Evran Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 59 s., Kırşehir.

Kaya M., 1999. Bursa ilinde ahududu zararlılarının tespit edilmesi ve bunlardan böğürtlen süslüböcegi, *Coroebus rubi* (L.) (Coleoptera: Buprestidae)'nin morfolojisi, biyolojisi ve ekolojisi üzerinde araştırmalar. Uludağ Üniversitesi Fen Bilimleri Enstitüsü, Doktora Tezi, 191 s., Bursa.

Legalov A.A., Friedman A.L.L., 2007. Review of the leaf-rolling weevils of Israel (Coleoptera: Curculionoidea: Rhynchitidae and Attelabidae). Israel Journal of Entomology, 37, 181-203.

Lodos N., 1960. Orta Anadolu'da meyve ağaçlarında zarar yapan Curculionidae (Hortumlu Böcekler) türleri üzerinde sistematik araştırmalar. Erciyes Üniversitesi Matbaası, Yayın No: 29, s. 76.

Lodos N., 1977. Additional notes to the Turkish Curculionidae (Coleoptera) (Brachyderinae). Türkiye Bitki Koruma Dergisi, 1 (2), 3-11.

Lodos N., Önder F., Pehlivan E., Atalay R., 1978. Orta Anadolu'da meyve ağaçlarında zarar yapan Curculionidae (Hortumlu Böcekler) türleri üzerinde sistematik araştırmalar. Ege Üniversitesi Ziraat Fakültesi Yayınları, Yayın No: 29, İzmir, 76 s.

Lodos N., Önder F., Pehlivan E., Atalay R., Erkin E., Tezcan S., Karsavuran Y., 1987. Akdeniz Bölgesi'nin ziraata zararlı ve faydalı böcek faunasının tespiti üzerinde araştırmalar. Tübitak Ortak Araştırmalar Grubu, 502, 9-10 s.

Lodos N., Önder F., Pehlivan E., Atalay R., Erkin E., Karsavuran Y., Tezcan S., Aksoy S., 2003. Faunistic studies on Curculionidae (Coleoptera) of Western Black Sea, Central Anatolia, and Mediterranean Regions of Turkey. Meta Basım Matbaacılık Hizmetleri, İzmir, 1-83.

Maçan G., 1986. Güneydoğu Anadolu Bölgesinde bademlerde zarar yapan böcek türleri, önemlerinin tanınmaları, yayılışları ve ekonomik önemleri üzerine araştırmalar. Tarım Orman Köyişleri Bakanlığı Araştırma Eserleri Serisi, No: 5, Ankara, 77 s.

Mihajlova B., 1978. Contribution to the study of fauna of snout beetles (Coleoptera: Curculionidae) of Macedonia. Fragmenta Balkanica, 10 (14), 1-234.

Osella G., 1977. Curculionidi nuovi o poco conosciuti della Penisola Anatolica: Le specie appartenenti ai generi *Myllocerus* Schönherr e *Ptochus* Schönherr (Coleoptera). Fragmenta Entomologica, 13 (1), 1-20.

Özbek H., 2016. Eskişehir'de vişnelerde beslenen *Otiorhynchus ovalipennis* Boheman (Coleopera: Curculionidae) ile ilgili notlar. Türkiye Entomoloji Bülteni, 6 (2), 175-178.

Özçağıran R., Ünal A., Özeker E., İsfendiyaroğlu M., 2003. Ilıman iklim meyve türleri. In: sert çekirdekli meyveler. Cilt-I, 553. Edn. Ege Üniversitesi Ziraat Fakültesi Yayınları, İzmir, s. 229.

Öztürk N., Ulusoy M.R., 2014. Malatya ili kayısılarında zararlı, *Polydrusus ponticus* Faust (Coleoptera: Curculionidae)'un zararı ve mekanik mücadelesi. Türkiye Entomoloji Dergisi, 38 (1), 61-69.

Öztürk N., Ulusoy M.R., Erkılıç L., Ölmez Bayhan S., 2004. Malatya ili kayısı bahçelerinde saptanan zararlılar ile avcı türler. Bitki Koruma Bülteni, 44 (1-4), 1-13.

Pehlivan E., Karsavuran Y., Tezcan S., 2005. Contributions to the knowledge of the Lixinae (Coleoptera: Curculionidae) from Turkey. Türkiye Entomoloji Dergisi, 29 (4), 259-272.

Polat Y., Kazankaya A., 2020. Şanlıurfa yöresinde selekte edilen bazı badem (*Prunus amygladus* L.) genotiplerinin meyve özellikleri. Yüzüncü Yıl Üniversitesi Tarım Bilimleri Dergisi, 30 (2), 328-337.

Sert O., 1995. İç Anadolu Bölgesi Curculionidae (Coleoptera) familyası üzerinde taksonomik çalışmalar. Fen Bilimleri Enstitüsü, Doktora Tezi, Hacettepe Üniversitesi, 184 s., Ankara.

Sert O., 2005. Akdeniz ve İç Anadolu Bölgesi'nde *Ceutorhynchus* Germar, 1824 ve *Tychius* Germar, 1817 (Coleoptera: Curculionidae) cinslerine bağlı türler üzerinde faunistik çalışmalar. Türkiye Entomoloji Dergisi, 29 (2), 135-149.

Sert O., Çağatay N., 1994. *Sitona, Bangasternus* ve *Larinus* (Coleoptera: Curculionidae) cinslerinden bazı türler üzerinde sistematik çalışmalar. Türkiye Entomoloji Dergisi, 18 (4), 223-236.

Sert O., Çağatay N., 1999a. İç Anadolu Bölgesi *Gymnetron, Hypera, Sibinia* ve *Tychius* (Coleoptera: Curculionidae) türleri üzerinde taksonomik çalışmalar. The Turkish Journal of Zoology, 23 (Ek Sayı 2), 521-544.

Sert O., Çağatay N., 1999b. İç Anadolu Bölgesinde Ceutorrhynchinae (Coleoptera: Curculionidae) altfamilyasından Ceutorrhyncidius, Ceutorrhynchus ve Zacladus türleri üzerinde taksonomik çalışmalar. Turkish Journal of Zoology, 23 (6), 545-563.

Sert O., Kabalak M., 2013. İnkumu ve çevresinin (Bartın, Türkiye) Böcek faunasının tespit edilmesi üzerine bir ön çalışma. Hacettepe Journal of Biology and Chemistry, 41 (1), 59-65.

Şimşek A., Dinler H., Duru S., 2020. Uşak ili sert çekirdekli meyve üreticilerinin fitopatolojik sorunlara yaklaşımlarının belirlenmesi. International Journal of Life Sciences and Biotechnology, 3 (2), 127-147. https://doi.org/10.38001/ijlsb.703382

Tamer A., Aydemir M., Has A., 1997. Ankara ve Konya illerinde korunga ve yoncada görülen zararlı ve faydalı böcekler üzerinde faunistik çalışmalar. Bitki Koruma Bülteni, 37 (3-4), 125-161.

Tamer A., Has A., Aydemir M., Çalışkaner S., 1998. Orta Anadolu Bölgesinde yemeklik baklagiller (mercimek, nohut, fasulye)'de görülen zararlı ve faydalı böcekler. Bitki Koruma Bülten, 38 (1-2), 65-9.

Tezcan S., Karsavuran Y., Pehlivan E., 2014. Türkiye *Polydrusus* (Coleoptera: Curculionidae: Entiminae) faunası için ek notlar. Türkiye Entomoloji Bülteni, 4 (2), 79-85.

Tolga M.F., Yoldaş Z., 2020. Muğla ve Manisa illeri badem bahçelerinde saptanan Coleoptera takımına ait türler ve bademde beslenen türler. Çanakkale Onsekiz Mart Üniversitesi Ziraat Fakültesi Dergisi, 8 (2), 443-453.

Tuatay N., Kalkandelen A.N., Aysev Ç., 1972. Nebat Koruma Müzesi Böcek Kataloğu (1961-1971). T.C Tarım Bakanlığı, Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü Yayınları, Meslek Kitapları Serisi, Ankara, 119 s.

Tüzün Ş., 1975. Marmara Bölgesindeki taş çekirdekli meyve ağaçlarında zararlı olan önemli Coleoptera türleri, tanınmaları, zararları ve zarar oranları üzerine araştırmalar. Ege Üniversitesi Ziraat Fakültesi, Zooloji Ana Bilim Dalı, Yüksek Lisans Tezi, 147 s., İzmir.

Voss E., 1962. Curculioniden aus Anatolien nebst einigen Bemerkungen. Reichenbachia, 1 (2), 5-15.

Voss E., 1969. Monographie der Rhynchitinen, Tribus Rhynchitini 2. Gattungsgruppe Rhynchitina (col. :

Curculionidae). Entomologische Arbeiten Aus dem Museum, 20, 117-375.

Yılmaz M., 2015. Kırşehir ili Curculionidae (Coleoptera) familyası üzerinde taksonomik ve morfolojik araştırmalar. Ahi Evran Üniversitesi Fen Bilimleri Enstitüsü, Biyoloji Anabilim Dalı, Yüksek Lisans Tezi, 109 s., Kırşehir.

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