



A CONTRIBUTION TO THE KNOWLEDGE OF INSECT-FOOD PLANT ASSOCIATIONS ON ROSACEAE FAMILY FROM EDIRNE PROVINCE (TURKISH THRACE)

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ABSTRACT

This study examines the associations between insect herbivores and rosaceous food plants during larval or adult stages. Field and laboratory studies were performed in Trakya University Balkan Campus (Edirne, Turkey) in 2013-2015 period. Herbivorous insects in different developmental stages were gathered alive from the field, 2-3 times a week and reared in laboratory to adult stages. In total, 123 herbivore-food plant associations belonging 53 insect and 11 plant species were identified. Among these, 45 new food plant records for the related herbivore species were determined. Five species (*Acleris rhombana* (D-S, 1775), *Archips crataegana* (Hübner, 1799), *Archips xylosteana* (L., 1758), *Ptycholoma lecheana* (L., 1758) (Lepidoptera: Tortricidae); *Acrobasis suavella* (Zincken, 1818) (Lepidoptera: Pyralidae)) and two genera (*Coleophora* sp. (Hübner, 1822) (Lepidoptera: Coleophoridae)), *Stigmella* sp. (Schrank, 1802) (Lepidoptera: Nepticulidae)) were added as new records for the fauna of Edirne province, four species (*Diurnea lipsiella* (D-S, 1775) (Lepidoptera: Chimabachidae), *Lycia zonaria* (D-S, 1775) (Lepidoptera: Geometridae), *Atethmia ambusta* (D-S, 1775) (Lepidoptera: Noctuidae), *Acrobasis advenella* (Zincken, 1818) (Lepidoptera: Pyralidae)) and one genus (*Xylophrurus* sp. Forster, 1869 (Hymenoptera: Ichneumonidae)) were added as new records for the fauna of European Turkey, one species (*Lissonota bilineata* Gravenhorst, 1829 (Hymenoptera: Ichneumonidae)) were added as a new record for the fauna of Turkey.

Keywords: Biocontrol, Herbivore, Rosaceae, Trophic association.

ÖZET

Bu çalışma, Rosaceae familyasına ait türler üzerinde beslenen herbivor böcekleri tespit etmek amacıyla yapılmıştır. Arazi ve laboratuvar çalışmaları, Trakya Üniversitesi Balkan Kampüsü (Edirne, Turkey)'nde 2013-2015 yılları arasında yürütülmüştür. Farklı gelişme dönemlerine ait herbivor böcekler haftada 2-3 kez bitkiler üzerinden canlı olarak toplanarak laboratuvara getirilmiş ve uygun gelişme ortamları sağlanarak erginleşmeleri sağlanmıştır. Çalışma sonucunda 123 herbivor-besin bitkisi birlikteliğine dahil 53 böcek ve 11 bitki türü belirlenmiştir. Bu birlikteliklerden elde edilen sonuçlara göre 45 böcek türü için yeni besin bitkisi ilk kez tespit edilmiştir. Edirne ili Lepidoptera faunası için beş tür (*Acleris rhombana* (D-S, 1775), *Archips crataegana* (Hübner, 1799), *Archips xylostean* (L., 1758), *Ptycholoma lecheana* (L., 1758) (Lepidoptera: Tortricidae); *Acrobasis suavella* (Zincken, 1818) (Lepidoptera: Pyralidae)) ve iki cins (*Coleophora* sp. (Hübner, 1822) (Lepidoptera: Coleophoridae)), *Stigmella* sp. (Schrank, 1802) (Lepidoptera: Nepticulidae)), Trakya Bölgesi Lepidoptera ve Hymenoptera faunaları için dört tür (*Diurnea lipsiella* (D-S, 1775) (Lepidoptera: Chimabachidae), *Lycia zonaria* (D-S, 1775) (Lepidoptera: Geometridae), *Atethmia ambusta* (D-S, 1775) (Lepidoptera: Noctuidae), *Acrobasis advenella* (Zincken, 1818) (Lepidoptera: Pyralidae)) ve bir cins (*Xylophrurus* sp. Forster, 1869 (Hymenoptera: Ichneumonidae)), Türkiye Hymenoptera faunası için de bir tür (*Lissonota bilineata* Gravenhorst, 1829 (Hymenoptera: Ichneumonidae)) bu çalışma ile ilk olarak kaydedilmiştir.

Anahtar Kelimeler: Biyokontrol, Herbivor, Rosaceae, Trofik birliktelik.

1. INTRODUCTION

Rosaceae is a large family comprising about 100 genera and 3000 species of plants which are climbers, perennial herbs, deciduous or evergreen shrubs and trees. In the world, the family has a cosmopolitan distribution, but its members show the maximum development within the Northern hemisphere (Cuizhi et al., 2003; Heywood, 2007).

Besides its biodiversity value, most of the Rosaceae family members are also important economically to livelihood of human. Among the family, there are trees, shrubs and ornaments which have edible fruits providing vitamins, sugars, and natural acids. The fruits are eaten fresh or processed to make jam, candy, fruit juice and alcoholic beverages. Other parts of the plants, such as flowers and leaves, are used for medical purposes. Moreover, Rosaceae family wood is used in industry (Cuizhi et al., 2003; Hummer, 2009).

Herbivorous insects comprise about half of all described insect species and they play an important role with plants on land (Schoonhoven, 2005). Among the insects that feed on Rosaceae family species, mainly there are chewing, sucking and gall-producing groups. Chewing insects, like Lepidoptera, are more abundant compared to sucking and gall-producing ones (Leather, 1986).

Insect herbivory is increased from time to time on fruit trees and shrubs, including the ones in Rosaceae family, reducing economic efficiency. To overcome this problem and increase the yield, producers mostly use chemical control agents. However, insecticides affect other non-pest insects, threatening biodiversity by reducing their populations. In recent years, biological control studies become more important. The aim here is to protect biodiversity and prevent unwanted consequences while increasing economic efficiency (Tunca, 2011). To implement these biological control studies effectively, the biology and the ecology of the target species, namely the trophic associations and interactions between the target herbivore and its food plant(s) or parasitoid(s), should be well-known. Thus, herbivorous insects, as the second trophic level, are important both for the plant that they feed on and for their natural enemies. In conclusion, regarding both agricultural efficiency and the conservation of plant, insect or the field, the insect-food plant knowledge is crucial.

In this study, insects fed on Rosaceae family species were investigated in Trakya University Balkan Campus located in Edirne province (European part of Turkey) and herbivorous insects-plant associations were intended to be listed.

2. MATERIAL AND METHODS

This study was carried out to determine herbivorous insects within different orders that feed on rosaceous plants. The study area is in Trakya University Balkan Campus in Edirne province (European part of Turkey). The area has the coordinates of 41°38'44" N, 26°37'24" E (66 m asl.), includes a small pond, and a 1.4 km segment of river (Güllapoğlu River) whose width ranged from 1 to 4 m. Furthermore, the study site is a protected natural area where has no chemical treatment occurred on vegetation. The habitat of the site also contains woody and herbaceous plants occupied by several Rosaceae family members, as well (Figure 1) (Özyavuz & Korkut, 2008; Okyar et al., 2012).

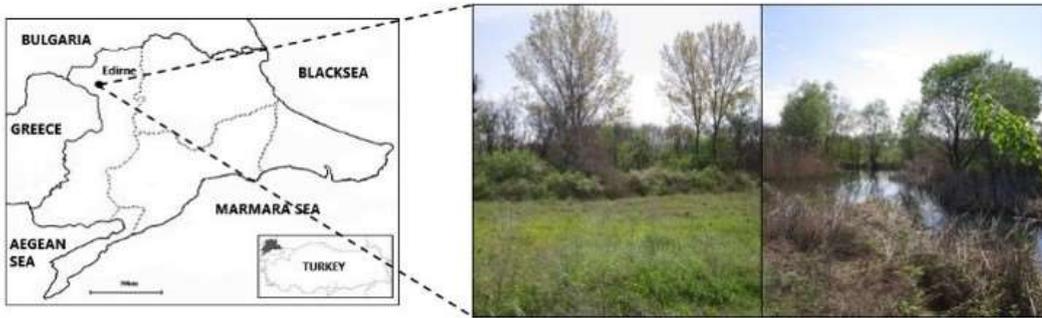


Figure 1. General view of the study area (200 hectares) and the river, located on the map of European part of Turkey.

To determine the insect-host plant associations, field and laboratory studies were performed in 2013-2015 period. Field studies were carried on blooming and foliage periods of rosaceous plants. Samplings were performed during 2-3 days of each week (4-5 days in some weeks) of the study period. During data collection period, specimens -in their mature and immature stages- were collected from the field, then reared and observed in the laboratory. The woody and herbaceous plant species which the samples collected are *Amygdalus communis* L., 1753 (almond), *Crataegus monogyna* Jacquin, 1775 (hawthorn), *Cydonia oblonga* Miller, 1768 (quince), *Geum urbanum* L., 1753 (wood avens), *Potentilla recta* L., 1753 (sulphur cinquefoil), *Prunus x domestica* L., 1753

(plum), *P. spinosa* L., 1753 (blackthorn), *Pyrus communis* L. 1753 (pear), *P. elaeagnifolia* Pallas, 1789 (wild pear), *Rosa canina* L., 1753 (dog rose), *Rubus sanctus* Schreber, 1766 (wild blackberry).

Adult insects flying around the flowers were collected by an insect net and put in labeled jars containing 70% ethanol. The eggs, larvae, pupae, adults, and nests on the plant surface were collected carefully by a forceps and hand-picking, or dropped by shaking the tree/bushes over a cloth. These living specimens were put in plastic boxes (10×15 cm gauze-covered) with the leaves of the plants they were collected on and brought to laboratory. In laboratory, each of these boxes was transferred into small plastic rearing containers (10×10 cm gauze-covered) or bigger cages (30×30 cm sized wooden cages which have stainless steel nets on all four sides, suitable for ventilation) including related plant leaves. After the samples were placed into their individual rearing boxes, all of them were labeled (including plant name and date at which they collected) and numbered. A total of 735 rearing boxes mostly including larvae and some adult insects (about 900 insects in total) were prepared to be reared and observed. The temperature and relative humidity of the laboratory during the rearing period were set to 27°C and 52% humidity. At the end of the rearing period, all obtained samples were arranged for identification. The identified insects are preserved in the Museum of Entomology in Department of Biology, Trakya University, Turkey.

3. RESULTS AND DISCUSSION

In this study, trophic associations between insects and plants have been examined; new insect-food plant associations have been listed and some behavioral and ecological observations about the species have been noted. 53 determined insect species belonging to 23 families and 4 orders were found to feed on 11 rosaceous plants (Figure 2; Table 1).

In total, 123 herbivore-food plant associations were listed; 45 of these (food plant records) were found for the first time in this study (Table 1). In addition, five species and two genera were added as new records for the province of Edirne, four species and one genus were added as new records for the European Turkey, and one species was added as a new record for the fauna of Turkey (Table 2). Some prominent species and their observed features should be remarked.

Eriogaster catax (L., 1758) (Lepidoptera: Lasiocampidae) was one of the most numerous species in field observations during the larval stage. However, adults emerged from their pupa were limited in number. It was observed that the caterpillars in their early instars lived gregariously in their tent like nests and left their nests in late instars to live solitarily. The larvae of this species were observed

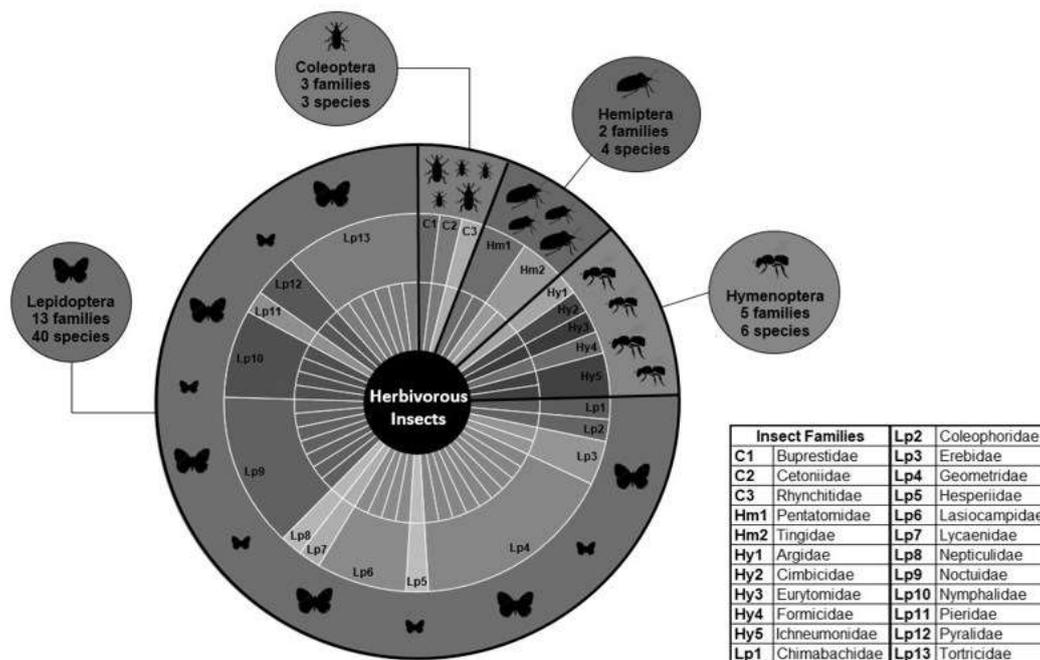


Figure 2. Number of herbivorous insect species found in this study and their families in four orders.

mostly on blackthorn feeding on the leaves and sometimes on the flower parts of the plant. There is no information about the conservation status of *E. catax* in Turkey. However, it is among the endangered species that must be protected in many countries of Europe (Anonymous, 1996; Anonymous, 2008). The degree of larval damage of this species on plants is minor (İren & Ahmed, 1973). However, one of the main reasons of the decline in *E. catax* populations is human impact in forms of habitat destruction and chemical treatment on their food plants (Chrzanowski et al., 2013).

The individuals of *Lissonota bilineata* Gravenhorst, 1829 (Hymenoptera: Ichneumonidae) were observed around almond flowers in their adult stages. Besides of feeding, *L. bilineata* might come to almond flowers also to search for its host. In literature, the hosts of this ichneumonoid were stated to be some Sesiidae and Tortricidae lepidopterans (Yu et al., 2012). Larval food plants of the defined host species of *L. bilineata* belong to the families of Betulaceae, Pinaceae, Rosaceae, Salicaceae (Györfi, 1943; Brown et al., 2008; Kimber, 2015). *L. bilineata* is a new hymenopteran record for the fauna of Turkey. The European distribution of this ichneumonoid species includes Austria, French mainland, Germany, Hungary, Republic of Moldova, Norwegian mainland, Spanish mainland, and The Netherlands (Anonymous, 2014).

In the field, the nest of *Acrobasis suavella* (Zincken, 1818) (Lepidoptera: Pyralidae) larvae was seen among the dry leaves of hawthorn and blackthorn. The larvae were noticed in laboratory, when the fresh leaves were put in the rearing box. Black coloured, distinct segmented and fast-moving

Table 1. Studied plants and the insects which were determined to feed on them.

Plant species	Insect order	Insect family	Insect species
<i>Amygdalus communis</i>	Hemiptera	Pentatomidae	<i>Mustha spinosula</i> (Herrich-Schäffer, 1839) ^(a) <i>Rhaphigaster nebulosa</i> (Poda, 1761) ^(a)
		Tingidae	<i>Monosteira</i> sp. (Costa, 1862) ^(a)
	Hymenoptera	Eurytomidae	<i>Eurytoma amygdali</i> (Enderlein, 1907) ^(f)
		Ichneumonidae	<i>Lissonota bilineata</i> Gravenhorst, 1829 ^{(a) (nh)}
	Lepidoptera	Erebidae	<i>Lymantria dispar</i> (L., 1758) ^{(l) ***}
		Geometridae	<i>Peribatodes rhomboidaria</i> (D&S, 1775) ^{(l) ***}
		Lasiocampidae	<i>Eriogaster catax</i> (L., 1758) ^{(l) ***}
			<i>Eriogaster lanestris</i> (L., 1758) ^{(l) ***}
			<i>Malacosoma neustria</i> (L., 1758) ^(l)
		Noctuidae	<i>Diloba caeruleocephala</i> (L., 1758) ^(l)
		Nymphalidae	<i>Nymphalis polychloros</i> (L., 1758) ^{(a) (n)}
		Tortricidae	<i>Archips crataegana</i> (Hübner, 1799) ^{(l) ***} <i>Archips rosana</i> (L., 1758) ^(l)
<i>Crataegus monogyna</i>	Coleoptera	Cetoniidae	<i>Tropinota</i> sp. (Mulsant, 1842) ^(a)
	Hemiptera	Tingidae	<i>Stephanitis pyri</i> (Fabricius, 1775) ^(a)
		Hymenoptera	Cimbicidae
	Lepidoptera	Coleophoridae	<i>Coleophora</i> sp. (Hübner, 1822) ^(l)
		Erebidae	<i>Lymantria dispar</i> (L., 1758) ^(l)
		Geometridae	<i>Colotois pennaria</i> (L., 1761) ^(l)
			<i>Erannis defoliaria</i> (Clerck, 1759) ^(l)
		Lasiocampidae	<i>Nychiodes waltheri</i> (Wagner, 1919) ^{(l) ***}
			<i>Eriogaster catax</i> (L., 1758) ^{(l) (fw)}
			<i>Eriogaster lanestris</i> (L., 1758) ^(l)
		Noctuidae	<i>Diloba caeruleocephala</i> (L., 1758) ^(l) <i>Valeria oleagina</i> (D-S, 1775) ^(l)
		Pieridae	<i>Aporia crataegi</i> (L., 1758) ^(l)
		Pyrilidae	<i>Acrobasis advenella</i> (Zincken, 1818) ^(l)
			<i>Acrobasis suavella</i> (Zincken, 1818) ^(l)
		Tortricidae	<i>Acleris rhombana</i> (D-S, 1775) ^(l)
			<i>Archips crataegana</i> (Hübner, 1799) ^{(l) ***}
			<i>Archips rosana</i> (L., 1758) ^{(l) ***}
			<i>Archips xylosteana</i> (L., 1758) ^{(l) ***}
<i>Hedya nubiferana</i> (Haworth, 1811) ^(l)			
<i>Mustha spinosula</i> (Herrich-Schäffer, 1839) ^{(a) ***}			
<i>Cydonia oblonga</i>	Hemiptera	Pentatomidae	<i>Mustha spinosula</i> (Herrich-Schäffer, 1839) ^{(a) ***}
	Lepidoptera	Erebidae	<i>Lymantria dispar</i> (L., 1758) ^{(l) ***}
		Geometridae	<i>Nychiodes waltheri</i> (Wagner, 1919) ^{(l) ***}
		Noctuidae	<i>Diloba caeruleocephala</i> (L., 1758) ^{(l) ***}
Tortricidae	<i>Hedya nubiferana</i> (Haworth, 1811) ^(l)		
<i>Geum urbanum</i>	Lepidoptera	Tortricidae	<i>Archips rosana</i> (L., 1758) ^{(l) ***}
<i>Potentilla recta</i>	Lepidoptera	Geometridae	<i>Lycia zonaria</i> (D&S, 1775) ^{(l) ***}
		Hesperiidae	<i>Pyrgus cinarae</i> (Rambur, 1839) ^(l)
<i>Prunus x domestica</i>	Hemiptera	Pentatomidae	<i>Mustha spinosula</i> (Herrich-Schäffer, 1839) ^{(a) ***}
	Hymenoptera	Formicidae	<i>Crematogaster ionia</i> Forel, 1911 ^{(a) (nh) ***}
		Erebidae	<i>Lymantria dispar</i> (L., 1758) ^(l)
	Lepidoptera	Geometridae	<i>Erannis defoliaria</i> (Clerck, 1759) ^(l)
			<i>Operophtera brumata</i> (L., 1758) ^(l)
		Noctuidae	<i>Diloba caeruleocephala</i> (L., 1758) ^(l) <i>Orthosia miniosa</i> (D-S, 1775) ^{(l) ***}
		Tortricidae	<i>Acleris rhombana</i> (D-S, 1775) ^(l)
			<i>Archips crataegana</i> (Hübner, 1799) ^{(l) ***} <i>Archips rosana</i> (L., 1758) ^(l)
<i>Prunus spinosa</i>		Coleoptera	Buprestidae
	Cetoniidae		<i>Tropinota</i> sp. (Mulsant, 1842) ^{(a) (fw)}
	Hymenoptera	Ichneumonidae	<i>Xylophrurus</i> sp. Forster, 1869 ^{(a) (nh)}
		Lepidoptera	Coleophoridae
	Erebidae		<i>Lymantria dispar</i> (L., 1758) ^(l) <i>Rhyparia purpurata</i> (L., 1758) ^(l)
	Geometridae		<i>Colotois pennaria</i> (L., 1761) ^(l)
		<i>Nychiodes waltheri</i> (Wagner, 1919) ^(l) <i>Peribatodes rhomboidaria</i> (D&S, 1775) ^(l)	
	Lasiocampidae	<i>Eriogaster catax</i> (L., 1758) ^(l)	
		<i>Eriogaster lanestris</i> (L., 1758) ^(l)	
		<i>Gastropacha quercifolia</i> (L., 1758) ^(l)	
		<i>Malacosoma neustria</i> (L., 1758) ^(l)	
	Lycaenidae	<i>Satyrrium acaciae</i> (Fabricius, 1787) ^(l)	
	Nepticulidae	<i>Stigmella</i> sp. (Schrank, 1802) ^(l)	
	Noctuidae	<i>Allophyes oxyacanthae</i> (L., 1758) ^(l)	
		<i>Diloba caeruleocephala</i> (L., 1758) ^(l)	

Plant species	Insect order	Insect family	Insect species
		Nymphalidae	<i>Valeria oleagina</i> (D-S, 1775) ^(l) <i>Polygonia c-album</i> (L., 1758) ^{(a) (n)} <i>Vanessa atalanta</i> (L., 1758) ^{(a) (n) ***}
		Pieridae	<i>Aporia crataegi</i> (L., 1758) ^(l)
		Pyralidae	<i>Acrobasis suavella</i> (Zincken, 1818) ^(l)
		Tortricidae	<i>Acleris rhombana</i> (D-S, 1775) ^(l) <i>Archips crataegana</i> (Hübner, 1799) ^{(l) ***} <i>Archips rosana</i> (L., 1758) ^(l) <i>Archips xylosteana</i> (L., 1758) ^(l) <i>Hedya nubiferana</i> (Haworth, 1811) ^(l) <i>Ptycholoma lecheana</i> (L., 1758) ^(l)
<i>Pyrus communis</i>	Coleoptera	Rhynchitidae	<i>Byctiscus betulae</i> (L., 1758) ^(l)
		Cetoniidae	<i>Tropinota</i> sp. (Mulsant, 1842) ^{(a) (fw)}
	Lepidoptera	Chimabachidae	<i>Diurnea lipsiella</i> (D-S, 1775) ^{(l) ***}
		Coleophoridae	<i>Coleophora</i> sp. (Hübner, 1822) ^(l)
		Erebidae	<i>Lymantria dispar</i> (L., 1758) ^(l)
		Geometridae	<i>Erannis declinans</i> (Staudinger, 1879) ^{(l) ***} <i>Erannis defoliaria</i> (Clerck, 1759) ^(l) <i>Operophtera brumata</i> (L., 1758) ^(l) <i>Pasiphila rectangulata</i> (L., 1758) ^(l) <i>Peribatodes rhomboidaria</i> (D-S, 1775) ^{(l) ***}
		Noctuidae	<i>Allophyes oxyacanthae</i> (L., 1758) ^(l) <i>Atethmia ambusta</i> (D-S, 1775) ^(l) <i>Diloba caeruleocephala</i> (L., 1758) ^(l)
		Lasiocampidae	<i>Eriogaster catax</i> (L., 1758) ^{(l) ***}
		Pieridae	<i>Aporia crataegi</i> (L., 1758) ^{(l) (e)}
		Tortricidae	<i>Acleris rhombana</i> (D-S, 1775) ^(l) <i>Archips crataegana</i> (Hübner, 1799) ^{(l) ***} <i>Archips rosana</i> (L., 1758) ^(l) <i>Archips xylosteana</i> (L., 1758) ^(l) <i>Hedya nubiferana</i> (Haworth, 1811) ^(l)
<i>Pyrus elaeagnifolia</i>	Lepidoptera	Erebidae	<i>Lymantria dispar</i> (L., 1758) ^{(l) ***}
		Noctuidae	<i>Atethmia ambusta</i> (D-S, 1775) ^(l) <i>Diloba caeruleocephala</i> (L., 1758) ^{(l) ** *}
		Pieridae	<i>Aporia crataegi</i> (L., 1758) ^{(l) ***}
		Tortricidae	<i>Archips rosana</i> (L., 1758) ^{(l) ***} <i>Archips xylosteana</i> (L., 1758) ^{(l) ***} <i>Hedya nubiferana</i> (Haworth, 1811) ^{(l) ***}
<i>Rosa canina</i>	Hymenoptera	Argidae	<i>Arge pagana</i> (Panzer, 1798) ^(l)
	Lepidoptera	Erebidae	<i>Lymantria dispar</i> (L., 1758) ^{(l) ***}
		Geometridae	<i>Earophila badiata</i> (D-S, 1775) ^(l) <i>Colotois pennaria</i> (L., 1761) ^(l) <i>Erannis defoliaria</i> (Clerck, 1759) ^(l)
		Lasiocampidae	<i>Eriogaster catax</i> (L., 1758) ^{(l) ***}
		Tortricidae	<i>Archips crataegana</i> (Hübner, 1799) ^{(l) ***} <i>Archips rosana</i> (L., 1758) ^(l) <i>Archips xylosteana</i> (L., 1758) ^{(l) ***}
<i>Rubus sanctus</i>	Lepidoptera	Erebidae	<i>Lymantria dispar</i> (L., 1758) ^{(l) ***}
		Noctuidae	<i>Acronicta rumicis</i> (L., 1758) ^{(l) ***} <i>Cerastis rubricosa</i> (D-S, 1775) ^{(l) ***} <i>Orthosia miniosa</i> (D-S, 1775) ^{(l) ***}
		Nymphalidae	<i>Brenthis daphne</i> (Bergsträsser, 1780) ^{(l) (p) ***}
		Tortricidae	<i>Archips rosana</i> (L., 1758) ^{(l) ***} <i>Archips xylosteana</i> (L., 1758) ^{(l) ***}

(a): individuals gathered from the field in adult stage; (e): gathered in egg stage; (l): emerged from the fruit as adult; (fw): observed while feeding on flowers; (l): collected in larval stage; (n): observed while feeding on nectar; (nh): non-herbivorous at all life stages; (p): collected in pupal stage; ***: new food plant records

larvae showed themselves during feeding sessions. The nest types were investigated after the adults emerged from their pupa. Their nest had a tunnel-like structure covered typically by dried leaves of their food plants and stuck on short thin branches. The larvae obtained in the field by shaking

method constructed similar tunnel-shaped nests in laboratory between tissue papers in their rearing boxes. The larvae are observed to live and enter pupae phase in these nest structures.

Table 2. New insect records for the fauna of Turkey, fauna of European Turkey, and fauna of Edirne province

Order	Family	Species	New record for
Hymenoptera	Ichneumonidae	<i>Lissonota bilineata</i> Gravenhorst, 1829	Turkey
		<i>Xylophrurus</i> sp. Forster, 1869	European Turkey
Lepidoptera	Chimabachidae	<i>Diurnea lipsiella</i> (D-S, 1775)	European Turkey
	Geometridae	<i>Lycia zonaria</i> (D-S, 1775)	European Turkey
	Noctuidae	<i>Atethmia ambusta</i> (D-S, 1775)	European Turkey
	Pyrilidae	<i>Acrobasis advenella</i> (Zincken, 1818)	European Turkey
		<i>Acrobasis suavelia</i> (Zincken, 1818)	Edirne province
	Coleophoridae	<i>Coleophora</i> sp. (Hübner, 1822)	Edirne province
	Nepticulidae	<i>Stigmella</i> sp. (Schrank, 1802)	Edirne province
	Tortricidae	<i>Acleris rhombana</i> (D-S, 1775)	Edirne province
		<i>Archips crataegana</i> (Hübner, 1799)	Edirne province
		<i>Archips xylostean</i> (L., 1758)	Edirne province
<i>Ptycholoma lecheana</i> (L., 1758)		Edirne province	

Gastropacha quercifolia (L., 1758) (Lepidoptera: Lasiocampidae) was observed as a single individual at its larval stage on a blackthorn branch. The larva showed mimicry and camouflage on the branch so that it was hard to easily recognize it. When the larva was transferred into the rearing box, it was observed to stay mostly immobile and did not feed in day light. It fed firstly on flowers and when the flowers were consumed, it started to feed on blackthorn leaves.

Tropinota sp. (Mulsant, 1842) (Coleoptera: Cetoniidae) individuals were observed both in field and laboratory conditions that the individuals of this species fed basically on petals and internal organs of flowers, but not on leaves.

Lycia zonaria (Denis & Schiffermüller, 1775) (Lepidoptera: Geometridae) is at medium priority status regarding international conservation. However, European populations of the species are clearly declining. Especially in Britain, high level of declining and locally disappearing is recorded. One of the main reasons of this population reduction is the human effect (Anonymous, 2007). In Turkey, conservation status of this species is not known. *L. zonaria* is a new record for Lepidoptera fauna of European Turkey and *Potentilla recta* is its new food plant record. *P. recta* is naturally distributed from east to west of Turkey. It is introduced to USA and Canada from Europe. Besides of its benefits, *P. recta* is a noxious weed. It is reported that this plant is a pest for meadows in European Turkey and strawberry fields in USA and Canada. The role of phytophagous insects in biological control applications on this plant was studied (Turanlı et al., 1999; Kışmalı & Turanlı, 2002).

Crematogaster ionia Forel, 1911 (Hymenoptera: Formicidae) was observed as a single individual while moving around the scale insect and tending its antenna over the scale of Coccoidea on plum branch.

Xylophrurus sp. Forster, 1869 (Hymenoptera: Ichneumonidae) individuals were collected around blackthorn flowers by the help of an insect net. Besides of feeding, the individuals might come to almond flowers also to search for its host. There is rosaceous plant record (*Rubus* sp.) associating with *Xylophrurus* (Yu et al., 2012). *Xylophrurus* is a new genus record for the Hymenoptera fauna of European part of Turkey.

Diloba caeruleocephala (L., 1758) (Lepidoptera: Noctuidae) larvae were collected from pear leaves and reared into adults in laboratory conditions. Female adults were observed to produce parthenogenetic eggs onto the top of rearing boxes after emerging from their pupa, but no larvae could have been obtained from these eggs. There is an observation record in literature about parthenogenesis in *D. caeruleocephala* individuals (Tutt, 1899).

4. CONCLUSION

Every knowledge about insect-food plant area is crucial for us in agriculture (like biological control) and conservation of biodiversity. If it is not known which insect has an association with which plant, the interactions between them cannot be known. This study contributed to food plant records for the herbivorous insects on Rosaceae family which have both biodiversity and economic value. There are several subjects to study to further enlighten the area of insect-plant interactions. Especially, allelochemicals - which are released from the plants to defense themselves - has to be investigated to understand the mechanisms underneath. Similar studies can be applied regarding allelochemicals of plants and the interaction of these volatile oils with the herbivorous insects.

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