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Original article (Orijinal araştırma)

First record of *Anatis ocellata* (Linnaeus, 1758) (Coleoptera: Coccinellidae) in Turkey

Anatis ocellata (Linnaeus, 1758) (Coleoptera: Coccinellidae)'nın Türkiye'deki ilk kaydı

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Abstract

Coccinellids sampled in this study were collected from the Taurus cedar (*Cedrus libani* A. Rich.) at Gölcük Natural Park in Isparta and Crimean pine (*Pinus nigra* Arnold.) in Bilecik Şeyh Edebali University Campus. *Anatis ocellata* (Linnaeus, 1758) was found among the collected coccinellids and is reported for the first time in Turkish coccinellid fauna, after the identification of samples. Morphological features and taxonomic characters of this species are given with distribution and habitat notes.

Keywords: *Anatis ocellata*, Bilecik, coccinellid, Isparta, new record

Öz

Gelin böcekleri, Isparta'da Gölcük Tabiat Parkı'nda Toros sediri (*Cedrus libani* A. Rich.) ve Bilecik Şeyh Edebali Üniversitesi Kampüsü'nde karaçam (*Pinus nigra* Arnold.) üzerinden toplanmıştır. Teşhis sonucunda toplanan örnekler arasında *Anatis ocellata*'nın bulunduğu ve Türkiye gelin böcekleri faunası için yeni kayıt olduğu belirlenmiştir. Bu çalışmada türün morfolojik özellikleri ile taksonomik karakteristikleri, yayılış ve habitat notları verilmiştir.

Anahtar sözcükler: *Anatis ocellata*, Bilecik, coccinellid, Isparta, yeni kayıt

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Introduction

Over 6000 species that belonged to family Coccinellidae are described worldwide in many different ecosystems (Abdolahi et al., 2017). In Turkey, the Coccinellidae is a well-known family with 6 subfamilies, 16 tribe, 39 genus and 105 species (Kaydan et al., 2012; Uygun & Karabüyük, 2013; Aysal & Kıvan, 2014). The species in this family are small with 1,5-10,0 mm height, sphere or oval in shape and have several colour and pattern variations. The elytra are generally red, orange, yellow and black with black and white spots and patterns (Nedved & Kovar, 2012; Rahaman & Aniszewski, 2016). Coccinellids are mostly predator and feed on aphids, scale insects, whiteflies, mealybugs, mites, fungus, Tysanoptera larvae, Lepidoptera, Coleoptera and Hymenoptera. Due to same feeding habits of adults and larvae, high food consumption capacities, fast moving, polyphagia and high distribution capacities in different ecosystems, the species of this family have been generally used in biological control for over a century (Uygun, 1981; Hodek & Evans, 2012).

Anatis ocellata (Linnaeus, 1758) is a common species of Holarctic region and in Europe. This species is found in forests that composed of coniferous trees and generally feed on aphids such as *Cinara pinea* in pine species, deciduous trees and like dog-rose shrub species such as *Acyrthosiphon pisum* (Núñez-Perez & Tizado, 1996; Serafim, 1997; Sloggett, 2008; Florek et al., 2011; Rahaman & Aniszewski, 2016).The aim of this study was to describe *A. ocellata*, is a new species for the Turkish fauna, found in Taurus cedar (*Cedrus libani* A. Rich.) and Crimean pine (*Pinus nigra* Arnold.).

Material and Methods

The coccinellids were collected on Taurus cedar and Crimean pine at Gölcük Nature Park (37°43’45’’N-30°29’05’’E, 1400 m), is located to southwest of Isparta and Bilecik Şeyh Edebali University Campus (40°11'24"N-29°16'04"E, 523 m).

Adult coccinellids were collected by hand picking and the methodology described by Steiner (1962) in study areas and brought to the laboratory for preparation and identification. Specimens were pinned and labelled. Female and male specimens were prepared by using the methodology described by Uygun (1981) for identification. Identification of specimens was confirmed by Prof. Dr. Nedim UYGUN (Emeritus Professor of Çukurova University, Agriculture Faculty, Plant Protection Department).

Results and Discussion

This paper presents the first record of *Anatis ocellata* (Linnaeus, 1758) in Turkey. General information and distributions of this species were given in below.

***Anatis ocellata* (Linnaeus, 1758) (Coleoptera: Coccinellidae)**

Isparta, Gölcük Nature Park (37°43’45’’N-30°29’05’’E, 1400 m), 15.07.2016, 3 female, 07.05.2017, 1 male (Leg. Şükran OĞUZOĞLU), Bilecik, Bilecik Şeyh Edebali University Campus (40°11'24"N-29°16'04"E, 523 m) 27.04.2015, 1 female (Leg. Derya ŞENAL).

Scientific classification of *Anatis ocellata*

Order:	Coleoptera
Suborder:	Polyphaga
Infraorder:	Cucujiformia
Superfamily:	Cucujoidea
Family:	Coccinellidae
Subfamily:	Coccinellinae
Tribe:	Coccinellini
Genus:	*Anatis* Mulsant 1846
Species:	*ocellata* (Linnaeus, 1758)

Synonyms

Coccinella ocellata Linnaeus, 1758

Coccinella boeberi Cederjhelm, 1798

Coccinella hebraea Linnaeus, 1758

Coccinella moscovica Gmelin, 1790

Coccinella oblongopunctata Fabricius, 1787

Coccinella sexlineata Fabricius, 1781

Distribution and habitat

Anatis ocellata is a species of Holarctic region and seen as common in Europe. It is stated to find in Hungary, Spain, Sweden, Austria, Caucasus Region, Transbaikal Region, China, Manchuria (Watson, 1976), Slovakia (Selyemova et al., 2007), Finland (Rahaman & Aniszewski, 2016), Belarus (Sushko, 2017), Belgium (Alhmedi et al., 2007), Romania (Serafim, 1997), Poland (Czechowska, 1995a; Czechowska, 1995b), England (Hewitt, 2005), Germany (Goßner & Simon, 2002), Portugal (Grosso-Silva, 2007), Norway (Östbye, 1969), Lithuania (Lazdāns & Barševskis, 2010), Latvia (Barševskis & Lazdāns, 2010), Switzerland (Katsanis et al., 2013), Czech Republic (Kalushkov & Hodek, 2001), Mongolia (Bielawski, 1984) and India (Mohan & Padmanaban, 2013).

This species is found in forests that composed of coniferous trees and generally feed on aphids in pine species and aphids such as *Acyrthosiphon pisum* on deciduous trees and like dog-rose shrub species (Serafim, 1997; Florek et al., 2011; Rahaman & Aniszewski, 2016). *A. ocellata* is determined on *Pinus sylvestris*, *Rosa rugosa*, *Picea abies, Pseudotsuga menziesii, Alnus glutinosa,* in linden, oak, hornbeam and pine forests (Czechowska, 1989; Czechowska, 1995a; Czechowska, 1995b; Goßner & Simon, 2002; Selyemova et al., 2007; Florek et al., 2011; Rahaman & Aniszewski, 2016).

It is stated that large coccinellid species like *A. ocellata* feed on *Cinara* species in conifer trees (Sloggett, 2008). It is remarked *A. ocellata* as predator of *C. pinea* (Núñez-Perez & Tizado, 1996). In this study, it is seen that *A. ocellata* feed on *C. cedri* which is pest on *C. libani*.

Morphology

Adult is 8.5 mm long and 6.3 mm wide. The elytra are reddish brown in colour with black spots. The first and last spots are bigger than others and each spot is enclosed by a yellowish halo ring. Black spots are not explicit or absent in some species. It is found eight spots in each two part of elytra, while 2-6 spots are black in colour others white-yellow, also one spot that enclosed with yellowish halo ring black in colour on scutellum (Freude et al., 1967; Rahaman & Aniszewski, 2016). However, according to Watson

(1976), it is found ten spots in each elytron and some spot may not distinct. Elytra are very narrow black lateral margins. Scutellum is black colour (Watson, 1976). Sides of elytra along the suture is a horizontal shape and it is found in the end of suture a narrow black triangle on that covered with short hairs (Pope, 1953). The pronotum is deep black in colour and normally white five spots, however, in some individuals, white band finds from front of pronotum to towards the back, also two spots in rear of pronotum (Dauguet, 1949). The legs are light brown or black and abdomen with thorax completely deep black in colour. Paramera is very little longer than aedeagus (Watson, 1976). The sex is running on the basis of the differences structure the 8th abdominal catheter surely. The rear edge of this plate rounded in the female, the man clearly embedded, but both in the middle section sclerotized. With regard to bristling, they show great agreement. Between the fine, cuticular, small arches arranged in small arches, there are much longer bristles in the posterior strips. Immediately at their sites, usually in pairs or three groups and scattered among them, funnel-like structures fall on. On the ventral side of the dorsal mucus, there is a further signification for the distinction of the sexes, which is without the application of optical aids. The 4th-7th abdominal segment shows flat-lined light-brown colored zones in the male. The sex of the female looks uniformly black. In rare cases, they are also brown-lined, but then very narrow and not arc-shaped (Kesten, 1969) (Fig. 1).

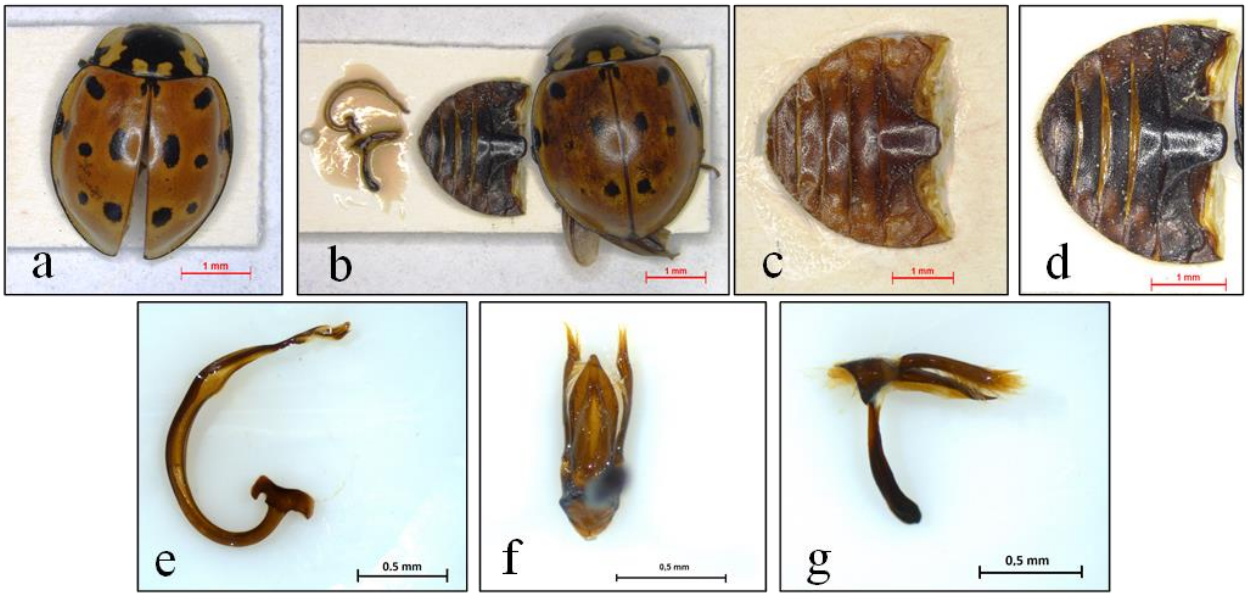

Figure 1. Adult female (a) and male (b), abdomen female (c) and male (d), siphon (e), aedeagus (f) and paramer (g) of *A. ocellata*.

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