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Dermaptera species in apricot orchards and its pest status in Malatya and Elazığ provinces of Eastern Anatolia, Turkey

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Abstract. This study was performed for detecting Forficulidae (Dermaptera) species in Malatya and Elazığ apricot orchards, between 2007 and 2011. According to our results, *Forficula auricularia* L.1758, *F. lurida* Fischer 1853, *F. aetolica* (Brunner, 1882), and *Isolaboides kosswigi* (Burr, 1947) were reported in apricot orchards. A total of 244 specimens was collected from all orchards, belonging to 3 species from Elazığ, and 4 species from Malatya. Amongst recorded species, *F. auricularia* harms were found in apricot fruits. In these cities, in terms of density and hazardous, *F. auricularia* was dominant, however it was estimated that after a while *F. lurida* species would increase its own population. The results of the study; *F. lurida*, *F. aetolica* and *I. kosswigi* were found in their collected fauna for the first time.

Key words: Dermaptera, Forficulidae, apricot, fauna, pest status.

Malatya, which is located in East Anatolia, corresponds the 54.8% of apricot tree entity of Turkey and it corresponds 47% of total production with the production of 148,015 tons of apricot growing (Anonymous 2011). The pest and diseases that affect productivity and quality were sited in apricot orchards. Ulusoy et al. (2001) determined that towards identifying apricot pests, 41 harmful insect species in Malatya province. Between these species, *Forficula auricularia* L. 1758 was informed as saprophytic harmful species in ripened apricots. According to Ayaz et al. (2009) *F. auricularia* is harmful in Kale, Battalgazi and Darende provinces (Malatya) on apricot fruits and they informed that pest percentage is 4% to 14% at the study for determining species which belong to Forficulidae family in the apricot orchards of Malatya. This study was conducted with the object of identifying the species belonging to family Forficulidae (Earwigs) located at apricot orchards of Malatya between 2008 and 2011.

The species were obtained from Apricot trees, by means of eye control and knock down methods (Steiner & Goodwin, 1998) in the districts of Malatya as Kale (740 m, 38° 24′ 0″ N, 38° 43′ 0″ E), Battalgazi (885 m, 38° 25′ 0″ N, 38° 21′ 0″ E) and Darende (1000 m, 38° 34′ 0″ N, 37° 30′ 0″ E) and Baskil (1220 m,38° 34′ 11″ N, 38° 49′ 23″ E) district of Elazığ and its villages. These samples were made in the period from March to August (2007-2011) following apricot phenology. The specimens were identified.

***Forficula auricularia* L. 1758**

Material examined: Malatya - Battalgazi: 30.V.2008, 5 ex., 12.VI.2009, 6 ex., 25.VI.2008, 12 ex., 02.VII.2008, 14 ex., leg, Ayaz; Kale, 18.VI.2008, 22 ex., 25.VI.2008, 11 ex., leg., Ayaz; Darende, 16.VII.2008, 15 ex., 23. VII.2008, 11 ex., leg., Ayaz. Elazığ - Baskil: Gemici, 30.V.2008, 5 ex., 23.VI. 2011, 8 ex., leg., Özgen; Pınarlı, 23.VI. 2011, 7 ex., leg., Özgen; Kadıköy, 23.VI. 2011, 5 ex., leg., Özgen, totally: 121 ex.

Comments: The most of this species was obtained from apricot fruits. It was observed that this species caused damage in apricot fruits.

***Forficula lurida* Fischer, 1853**

Material examined: Malatya - Battalgazi 25.VI.2008, 10 ex., 12.VII.2008, 11 ex., leg, Ayaz; Kale, 18.VI.2008, 5 ex., 25.VI.2008, 3 ex., leg., Ayaz; Darende, 30.VII.2008, 21 ex., 06. VIII.2008, 3 ex., leg., Ayaz. Elazığ-Baskil: Şahaplı, 23.VI. 2011, 12 ex. leg., Özgen; Doğancık, 23.VI. 2011, 5 ex., leg., Özgen; Kadıköy, 28.V. 2011, 12 ex., 23.VI. 2011, 5 ex., leg., Özgen; Pınarlı, 23.VI. 2011, 14 ex., leg., Özgen, Totally 101 ex.

Comments: This species was a kind of species that shows wide spreading (Anlaş & Kocarek 2012). In the previous studies, this species was determined in olive fields (Kaçar & Nishikawa 2014). For the first time, it was founded in apricot orchards in this region.

***Forficula aetolica* Brunner 1882**

Material examined: Malatya - Battalgazi 06.VI.2008, 9 ex, leg, Ayaz; Kale, 18.VI.2008, 2 ex., Elazığ, Pınarlı, 23.VI. 2011, 11 ex., leg., Özgen, totally: 22 ex.

Comments: Samples were collected by sweep net and fruit sampling. This species was firstly recorded in Malatya and Elazığ fauna.

***Isolaboides kosswigi* (Burr 1947)**

Material examined: Malatya, Darende, 30.VII.2008, 2 ex, leg., Ayaz,

Comments: Samples were collected by means of sweep net. This species was firstly determined in Malatya fauna. Anlaş & Kocarek (2002) has reported that by of the Aegean, Marmara regions and Gaziantep province of southeastern Anatolia.

Family Forficulidae spread up to tropical regions throughout the Palearctic and Nearctic region of the World which usually at the humidity areas with approximately 2200 species (Anlaş & Kocarek, 2012). The family specimens were shown to distribution on where cherry, pomegranate and olive fruit trees and represented by 19 species in Turkey (Öztürk & Ulusoy 2009, Tezcan & Kocarek 2009, Anlaş & Kocarek 2012, Kaçar & Nishikawa 2014). *F. auricularia* has been identified in previous studies in apricot orchards and however it also provides information about the damage status (Ayaz & Özgen 2015). The population of the species is expected to increase with climate change in the apricot orchards. The populations with climate change is likely to bring the need

to focus on the change in the interaction between insect foods and deficiency of plant nutrient due to the omnivory. According to the number of species in Malatya apricot orchards of *F. auricularia* was determined to be more than Elazığ apricots orchards. *F. lurida* and *F. aetolia* were determined as being in the equal number to approximately that both provinces. *I. kosswigi* has been identified in only a small number in Malatya province.

The study that distribution by the monthly of species was seen in the beginning the August to the end of May at the nature of theirs. In addition, it was observed that the population of species increased in the apricots ripening period which begins from June and lasts to July. In this period, populations of *F. auricularia* and *F. lurida* has increased.

In the initial period of populations increase with the seen period of species in nature, the behaviors of species in natural fauna should be followed and the natural enemy and the population challenges were connected with the climate changes should be considered at Integrated Apricot Studies.

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