



ISSN 2347-2677

IJFBS 2019; 6(4): 91-92

Received: 04-05-2019

Accepted: 08-06-2019

İnanç Özgen

Firat University, Engineering
Faculty, Bioengineering
Department, Elazığ, Turkey

The parasitoids on *Scolytus kirschii* skalitzky, 1876 (Coleoptera: Scolytidae) on *Ficus carica* L. and their Parasitisation rates in Turkey

İnanç Özgen

Abstract

This study has been carried out with the purpose of determining the parasitoids of the species Scolytidae causing damage on fig trees and parasitization rates between 2016 and 2017. Damages caused by the *Scolytus kirschii* (Skalitzky, 1876) species on fig plant have been determined for the first time. In this study, the species *Cheiropachus quadrum* (Fabricius, 1787) and *Rhaphitelus ladenbergi* (Ratzeburg 1844) have been determined as the parasitoids of the species *S. kirschii*. While the species *C. quadrum* (Fabricius, 1787) is known as the parasitoid of *S. kirschii* in some countries outside Turkey, the species *R. ladenbergi* has been recorded as the parasitoid on *S. kirschii* for the first time. Of the parasitoids exiting from twigs contaminated with the pest, 78.11% has been determined as *R. ladenbergi*, while 21.89% determined as *C. quadrum*.

Keywords: *Scolytus kirschii*, *Cheiropachus quadrum*, *Rhaphitelus ladenbergi*, new host, Parasitization Rate, *Ficus carica*

Introduction

Species belonging to the Scolytidae family in Coleoptera order are called as bark beetles or “writer bugs” in Turkish, and are capable of creating great harm in a large part of the world including forests and agricultural areas in the first place by feeding on barks and cambiums of trees (Karaman and Tezcan, 2006) [3]. Among these species, *S. kirschii* is a species spreading in Iran, Azerbaijan (Samin *et al.* 2011) [8], Southern Europe, North Africa, Southern Russia, Iraq, Israel, Turkey, Tajikistan and South Africa and mostly cause’s harm on *Ulmus* spp. This pest also causes harm on culture plants including *Fagus sylvatica*, *Prunus armeniaca*, *Cerasus avium* and *Prunus domestica* from time to time (Modarres Awal 1997; Samin *et al.* 2011) [8]. There is no data in the previous studies indicating that this species causes harm on the fig plant. In this study, it has been concluded that this pest secondary damage on the wood tissue of the fig plant (Figure 1). Natural enemies of this pest found on the pest are important as regards biodiversity and biological control. The pest has important natural enemies that have been found. *Cheiropachus quadrum* (Fabricius, 1787) [7] and *Rhaphitelus ladenbergi* (Ratzeburg 1844) species has been determined as the natural enemies of the pest. There are no records present indicating that these species parasitizes the pest in our country. However, it has been reported that *C. quadrum* included in such species parasitizes this species throughout the world (Flechtmann *et al.*, 2006) [2]. As regards the *R. ladenbergi* included in the parasitoids determined however, it has been found for the first time with this study that this species parasitizes the pest. The findings of this study are significant as regards the pests of the fig plant and biological control against them.

Material and Methods

Branches of the ficus tree (*Ficus carica*) that were attacked by *S. kirschii* in Diyarbakır (Eğil) /Turkey were collected. The attacked branches were collected from the ground. The branches were collected in the period between December 2016 and December 2017. Materials were cultured in dishes daily and parasitoid exits were recorded.

Results and Discussion

Cheiropachus quadrum (Fabricius, 1787) [7].

Correspondence

İnanç Özgen

Firat University, Engineering
Faculty, Bioengineering
Department, Elazığ, Turkey

Host: *Scolytus pygmaeus*, *S. scolytus*, *S. kirschii*, *S. japonicas*, *Hylesinus fraxini*

Remarks: First recording in Eastern Anatolia. *Rhaphitelus ladenbergi* (Ratzeburg 1844)

Hosts: *Scolytus rugulosus*, *S. intricatus*, *S. japonicus*, *S. multistriatus*, *Hylesinus fraxini*

Remarks: First recording in Eastern Anatolia.

According to many studies in various publications, the many Chalcid wasps have been recorded as parasitoids of various bark beetles. Scolytids of genus *Scolytus* attack many tree species and also some Scolytids have been reported within the whole Europe. Eg. these parasitoids were recorded from the host *S. rugulosus* (Müller 1818) damaging different fruit trees (Lotfalizadeh and Gharali, 2008, Gumovsky 1999, Narendran *et al.*, 1995, Markovic and Stojanovic, 2003) [4]. *C. quadrum* is the most important Chalcid was also on *Hylesinus fraxini* (Panzer 1779) (Campos and Lozano, 1994). Both *C. quadrum* and *R. maculatus* are known parasitoids of numerous xylophagous species mainly belonging to Scolytidae but also Curculionidae and Cerambycidae are other rare parasitoids (Nakladal, 2007) [7]. On *S. kirschii* however, it has been reported that *C. quadrum* and *R. maculatus* are id in the important parasitoid species in Brazil. Of these species, *C. quadrum* is among the most widespread species with a rate of 76.4%, while proportion of *R. maculatus* has been determined as 16.5% among the parasitoids collected (Flechtmann *et al.*, 2006) [2]. This study supports their importance in the light of natural enemies for *S. kirschii* also in the region of Anatolia. *R. ladenbergi* (Ratzeburg 1844) (Hymenoptera: Pteromalidae) is a parasitoid of *S. multistriatus* on *Fraxinus* sp. in Iran (Abd-Rabou *et al.* 2005) [1]. However, no records have been found indicating that this species parasitizes *S. frischii*. This record is the first report about the pest and parasitoid interaction. Furthermore, 78.11% of the parasitoids exiting from branches contaminated with the pest have been determined as *R. ladenbergi* species, while 21, 89% have been determined as *C. quadrum* species. Results of this study are important as regards the biological fight against this pest and further studies on biodiversity.

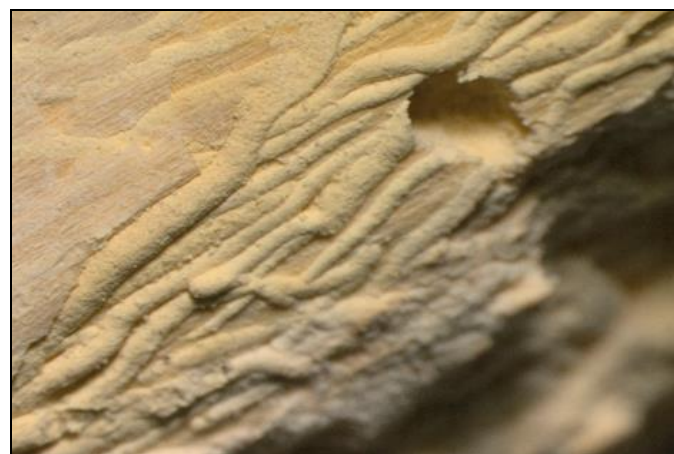


Fig 1: Harm and exit hole of *Scolytus frischii* under the bark of *Ficus carica*

Acknowledgements

I wish to express my thanks to Mr. Mehmet Zeki EFE, who

had provided material support for the study and many thanks to Prof Dr. Miktat Doğanlar (Plant Protection Research Institute, Adana/ Turkey) for parasitoid species identification, to Assoc. Prof Dr. Guzman Sari kaya for Scolytidae species identification.

References

1. Abd-Rabou S, Ghahari H, Huang J, Boucek Z. New records of aphelinid and pteromalid wasps (Hymenoptera: Chalcidoidea: Aphelinidae, Pteromalidae) from Iran. Egyptian Journal of Agricultural Research. 2005; 83:1619-1623.
2. Flechtmann CAH, Costa VA, M Botton. Occurrence of *Scolytus kirschii* (Coleoptera: Scolytidae) and associated parasitoids (Hymenoptera: Chalcidoidea) in South Brasil, XXI Congresso Brasileiro de Entomologia, 2006, 728-1.
3. Karaman Ş, Tezcan S. A Review on the Natural Enemies of Bark Beetles (Coleoptera, Scolytidae). Aegean Forestry Research Publication. 2006; 1:78-102.
4. Lotfalizadeh H, Gharali B. Pteromalidae (Hymenoptera: Chalcidoidea) of Iran: New records and a preliminary checklist. Entomofauna. 2008; 29(6):93-120.
5. Markovic C. Significance of parasitoids in the reduction of oak bark beetle *Scolytus intricatus* Ratzeburg (Col., Scolytidae) in Serbia, 2016.
6. Modarres Awal M. Platypodidae, Scolytidae. In: Modarres Awal, M. (Ed.), List of agricultural pests and their natural enemies in Iran. Ferdowsi University Press, Mashhad. 1997; 185:192-194.
7. Nakladal O. Contribution to knowledge of *Scolytus pygmaeus* (Fabricius, 1787) (Coleoptera: Scolytidae) natural enemies from northern Moravia (Czech Republic)– Forestry Journal. 2007; 53(3):221-226.
8. Samin N, Sakenin H, Rastegar J. A study of the species composition of Scolytidae (Coleoptera) of north and northwestern Iran. Amurian Zoological Journal. 2011; 3:265-267.
9. Selmi E. *Scolytus* Species of Turkey. I.U. Forestry Faculty Journal, A. 1985; 35(2):94-105.