Ege Üniv. Ziraat Fak. Derg., 2001, 38 (1): 33-38
ISSN 1018-8851

Notes on the Pitfall Trap Collected Carrion Beetles (Coleoptera, Silphidae) in Ecological Cherry Orchards in Izmir and Manisa Provinces of Turkey

Serdar TEZCAN[1] **Jiří HÁVA**[2]

Özet

İzmir ve Manisa İlleri ekolojik kiraz üretim bahçelerinde çukur tuzaklarla toplanan Silphidae (Coleoptera) familyası türleri üzerinde bir değerlendirme

1998 ve 1999 yıllarında ekolojik kiraz üretimi yapılan Muradiye (Manisa-Merkez) (38^0 39' K / 27^0 20' D), Ören (İzmir-Kemalpaşa) (38^0 28' K / 27^0 36' D) ve Armutlu (İzmir-Kemalpaşa) (38^0 25' K / 27^0 32' D)'daki bahçelerde yürütülen bu çalışmayla Silphidae familyasına bağlı türlerin ortaya konması amaçlanmıştır. Bu amaçla çukur tuzak yöntemiyle örnek toplanmıştır. Çalışma sonunda toplam 4 tür saptanmış olup, bunlar ***Thanatophilus sinuatus*** (Fabricius, 1775)***, Silpha obscura orientalis*** Brullé**,**1832, ***S. tristis*** Illiger, 1798 ve ***Nicrophorus antennatus*** Reitter, 1884'dur. Bu türlerden ***S. obscura orientalis***'in en bol bulunan tür olduğu belirlenmiştir.

Anahtar sözcükler: Silphidae, Türkiye, ekolojik kiraz

---

[1] Assoc. Prof. Dr., Department of Plant Protection, Faculty of Agriculture, Ege University, 35100 Bornova, İzmir, Turkey.
e-mail: tezcan @ ziraat.ege.edu.tr

[2] Dr., Department of Entomology, National Museu Prague, Golcčva 1, CZ-148 00 Praha 4, Czech Republic.

Introduction

Adults and larvae of carrion beetles feed on animal matter such as snails and the larvae of caterpillars, tenthredinids and maggots as well as carrions and decomposing plant matter. In addition to these, few species are known as plant pests. Tendency to being predator, improving their role in agricultural ecosystems. Information on the Silphidae fauna of Turkey can be obtained from the following publications (1, 2, 3, 4, 7, 8, 9, 10, 11).

Carrion beetles populations like other organisms are being affected by chemicals such as pesticides, fertilizers etc. that are used in conventional agriculture. To minimize this side effect, ecological agriculture applications have been started all over the world. In western Turkey ecological cherry production methods have been applied in a project in important cherry production areas of, Izmir and Manisa, during the years of 1998 and 1999 (12).

In this project different types of traps and different collection methods were used for both monitoring and control purposes of insect pests in those orchards. Carrion beetles collected by pitfall traps were evaluated in this paper.

Material and Methods

The experiments were conducted in ecological cherry orchards in three locations: Muradiye (Manisa - Central province) (38^0 39' N / 27^0 20' E), Ören (İzmir - Kemalpaşa) (38^0 28' N / 27^0 36' E) and Armutlu (İzmir - Kemalpaşa) (38^0 25' N / 27^0 32' E), of western Turkey. In these orchards there are 550 trees in Muradiye, 160 trees in Ören and 165 trees in Armutlu.

Carrion beetles were collected by pitfall traps. Pitfall traps consisted of 250 ml cups buried in the soil in such a way that the lip of the trap was at ground level. They were half filled with ethylen glycol and water mixture as 1:1 ratio. Three traps were used in each orchards during the period between 1 April 1998 and 20 December 1999. The beetles were collected and the traps were cleared in two weeks intervals from the beginning of April up to the end of October in 1998 and 1999, and in three weeks intervals from the beginning of November 1998 to the end of March 1999.

Material were collected by the first author and determined by the second author and were housed in Prof. Dr. Niyazi Lodos Museum

of Plant Protection Department, Faculty of Agriculture, Ege University, İzmir, Turkey.

Results

Material evaluated in this study are given below.

Thanatophilus sinuatus (Fabricius, 1775)

This Palaearctic species reported from Turkey by previous researchers (1, 2, 7, 10).

Material studied: Armutlu, 1.VI.1999, 1 specimen.

Note: A rare species and 1 specimen was found only in Armutlu.

Silpha obscura orientalis Brullé, 1832

It is a Palaearctic species and reported from Turkey (1, 2, 4, 7, 9).

Material studied: Muradiye, 6.V.1998, (1); 21.V.1998, (4); 1.VI.1998, (14); 13.VI.1998, (3); 3.VII.1998, (6); 27.IV.1999, (2); 17.V.1999, (6); 31.V.1999, (10); 16.VI.1999, (4); Ören, 6.V.1998, (1); 21.V.1998, (5); 1.VI.1998, (21); 13.VI.1998, (18); 3.VII.1998, (8); 26.III.1999, (1); 13.IV.1999, (3); 27.IV.1999, (7); 4.V.1999, (2); 18.V.1999, (12); 1.VI.1999, (51); Armutlu, 6.V.1998, (6); 21.V.1998, (5); 1.VI.1998, (18); 13.VI.1998, (63); 3.VII.1998, (23); 26.II.1999, (1); 27.IV.1999, (8); 18.V.1999, (22); 1.VI.1999, (49); 16.VI.1999, (9). 383 specimens.

Note: Distributed all over Turkey and it is the most abundant species collected in this study.

Silpha tristis Illiger, 1798

Known from Europe, Caucasus, Iran and reported from Turkey (1, 2, 4).

Material studied: Armutlu, 1.VI.1998, (1); 3.VII.1998, (1); Ören, 1.VI.1999, (3). 5 specimens.

Note: A rare species. 5 specimens were found in Armutlu and Ören in this study.

Nicrophorus antennatus Reitter, 1884

Known from Europe, Caucasus, Turkestan, Mongolia and Manzhuria. Previously reported from Turkey (2, 3).

Material studied: Armutlu, 16.VI.1999, 2 specimens.

Note: This rare species were found only in Armutlu in this study.

Discussion

In consequence of this study, a total of 391 specimens of 4 carrion beetle species were collected in the ecological cherry orchards (Table 1). Among these ***S. obscura orientalis*** is the dominant species (97,95 %) in the catches of pitfall traps. This species can be found in both animal and plant decaying matter. However, animal matter is mostly preferred. Sometimes they feed on plant matter.

Table 1. List of carrion beetle species and their total number of individuals collected in 3 ecological cherry orchards by pitfall traps in 1998 and 1999

Species	Total trapped							
	1998				1999			
	Muradiye	Ören	Armutlu	**Total**	Muradiye	Ören	Armutlu	**Total**
Thanatophilus sinuatus (Fabricius, 1775) *							1	1
Silpha obscura orientalis Brullé, 1832 **	28	53	115	196	22	76	89	187
Silpha tristis Illiger, 1798 *			2	2		3		3
Nicrophorus antennatus Reitter, 1884 *							2	2
Total	**28**	**53**	**117**	**198**	**22**	**79**	**92**	**193**

* Determined for the first time in Izmir province ** Determined for the first time in Manisa province

S. obscura orientalis and ***S. tristis*** were caught in both years and the other two species were caught only in 1999 (Figure 1).

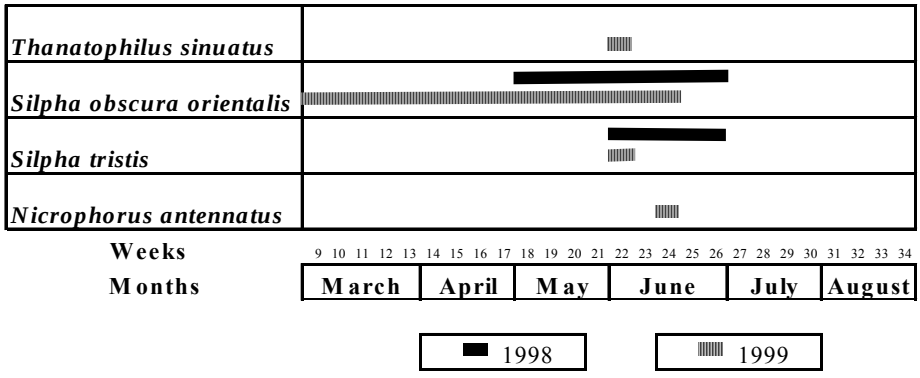

Figure 1. Occurrence of the studied species during the period between 1998 and 1999.

As it has been observed in Table 1, one species, ***S. obscura orientalis*** was caught in Muradiye while 2 and 4 species were caught in Ören and Armutlu, respectively.

Although the other collection methods such as knock down, sticky yellow trap, bait trap, sweeping net were used in this project, all carrion betles were collected only by pitfall traps and the results of this collection were given in this paper. Collecting by pitfall traps may be the best method in places where carrion beetles are destructive to agricultural crops.

In this study, 4 carrion beetle species have been determined for the first time in ecological cherry orchards. Neither those species nor other carrion beetle species have been reported from conventional or integrated cherry orchards in recent studies in Turkey (5, 6, 13, 14).

Acknowledgements

The authors would like to thank to Mr. M. A. IŞIK, B. AKSOY and H. SEVINAY for providing access to their farms during the study. Thanks are also due to N. GÜLPERÇIN for technical assistance in field and in laboratory. Support for this study was provided by State Planning Organisation grant 98 K 121280 and the Rectorate of Ege University Research Fund.

Summary

The aim of this study is to verify and assure the presence or absence of carrion beetles in ecological cherry orchards in Turkey and hence make a contribution to Silphidae fauna of Turkey. To fulfil this aim, a study was conducted in ecological cherry orchards in Muradiye (Manisa-Central province) (38^0 39' N / 27^0 20' E), Ören (İzmir-Kemalpaşa) (38^0 28' N / 27^0 36' E) and Armutlu (İzmir-Kemalpaşa) (38^0 25' N / 27^0 32' E), of western Turkey during the years 1998 and 1999. Carrion beetles were collected by pitfall traps.

At the end of this study, a total of 4 carrion beetle species being ***Thanatophilus sinuatus*** (Fabricius, 1775)***, Silpha obscura orientalis*** Brullé, 1832***, S. tristis*** Illiger, 1798 and ***Nicrophorus antennatus*** Reitter, 1884 have been determined. ***S. obscura orientalis*** being the most abundant species among them.

Key words: Silphidae, Turkey, ecological cherry

References

1. Hatch, M.H., 1928. Silphidae, II.63-244. In: S.Schenkling (Ed.) Coleopterorum Catalogus, Pars: 95. W. Junk, Berlin, 244 pp.

2. Háva, J., J.Růžička & J. Schneider, 1998. Faunistic records of Silphidae (Coleoptera) from Turkey. **Klapalekiana, 34**: 173-181.

3. Hlisnikovsky, J., 1932. Zwei neue Arten der Gattung ***Necrophorus*** Fab. (Coleoptera, Necrophorini) nebst einer Bestimmungstabelle der mir bekannten Arten der palaarktischen Fauna. **Col. Centralbl., 6:** 22–30.

4. Lodos, N., 1989. Türkiye Entomolojisi IV (Genel, Uygulamalı, Faunistik). **E. Ü. Ziraat Fakültesi Yayınları**, No: 493. Bornova-İzmir, 250 pp.

5. Özbek, H., Ş. Güçlü & R. Hayat, 1996. Kuzeydoğu tarım bölgelerinde taş çekirdekli meyve ağaçlarında bulunan fitofag ve predatör böcek türleri. **Tr. J. of Agriculture and Forestry, 20** : 267-282.

6. Özder, N., 1999. Tekirdağ İlinde kiraz bahçelerinde bulunan doğal düşmanlar ve bunlardan yumurta parazitoiti ***Trichogramma cacoeciae*** March. (Hym.: Trichogrammatidae)'nin yaprak büken türlerinde (Lep.: Tortricidae) doğal etkinliği üzerinde araştırmalar. Türkiye 4. Biyolojik Mücadele Kongresi, 26-29 Ocak 1999, Adana, 663 s., 341-354.

7. Portevin, G., 1926. Les grands nécrophages du globe, Silphini - Necrodini - Necrophorini. Paul Lechevalier, Paris, 270 pp.

8. Schawaller, W., 1979. Revision der Gattung ***Ablattaria*** Reitter, 1884 (Coleoptera: Silphidae). **Stutgart. Beitr. Naturk. (A), 321:** 1-8.

9. Schawaller, W., 1980. ***Silpha obscura,*** ein Beispiel für Subspecies-Differenzierung bei Kafern (Coleoptera, Silphidae). **Stutgart. Beitr. Naturk. (A), 334:** 1-11.

10. Schawaller, W., 1981. Taxonomie und Faunistik der Gattung ***Thanatophilus*** (Coleoptera: Silphidae). **Stutgart. Beitr. Naturk. (A), 351:** 1-21.

11. Schawaller, W., 1996. Revision der Gattung ***Aclypea*** Reitter (Coleoptera: Silphidae). **Stutgart. Beitr. Naturk. (A), 541:** 1-16.

12. Tezcan, S., A. Mısırlı, B. Okur, M. A. Ul, A. Olgun, N. Çetinkaya, A. Ünal, N. Eryüce, C. Harputlu, H. Demirkan, U. Aksoy, D. Anaç, B. Çokuysal & H. Çakıcı, 1999. İzmir ve Manisa'da ekolojik kiraz üretim olanakları üzerinde bir araştırma. Türkiye 1. Ekolojik Tarım Sempozyumu, 21-23.VI.1999, İzmir, 28 p.

13. Ulu, O., A. Önuçar, A. Zümreoğlu, S. Uzun, T. M. Erdügen, K. Aykaç, M. Kılıç, O. Çakır, S. Ceylan & T. Koçlu, 1995. Kiraz bahçelerinde entegre mücadele araştırma, geliştirme ve uygulama projesi, BKA / U17, 1.dilim sonuç raporu, 84 pp. (Unpublished).

14. Ulusoy, R., G. Vatansever & N. Uygun, 1999. Ulukışla (Niğde) ve Pozantı (Adana) yöresi kiraz ağaçlarında zararlı olan türler, doğal düşmanları ve önemlileri üzerindeki gözlemler. **Türk. entomol. derg., 23** (2): 111-120.