

# A contribution to the knowledge of Cerambycidae (Insecta: Coleoptera) species of the Eastern Black Sea Region in Turkey\*

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## Summary

In this study, 41 Cerambycidae species were determined in the Eastern Black Sea Region in Turkey. Of these, *Rhagium sycophanta* (Schrank), *Leptura aurulenta* Fabricius, *L. maculata* Poda, *Arhopalus ferus* (Mulsant), *Trichoferus fasciculatus* (Faldermann), *Isotomus speciosus* (Adams), *Phytoecia nigripes* (Voet), *Pyrrhidium sanguineum* (Linnaeus), *Phymatodes testaceus* (Linnaeus) and *Plagionotus speciosus* (Adams) are new records for the Cerambycidae fauna of the Eastern Black Sea Region. Some features such as sex, length, color of the specimens were studied. An evaluation was made on the hosts of these species in Europe and in Asia Minor, and the distribution of these species in Turkey.

**Key words:** Cerambycidae, longhorn beetles, Turkey

**Anahtar sözcükler:** Cerambycidae, tekeböcekleri, Türkiye

## Introduction

Cerambycidae (Coleoptera) (the longhorn beetles) are often classified together with the Chrysomelidae (Coleoptera) (leaf beetles) and the Bruchidae (Coleoptera) (seed beetles) in the superfamily Chrysomeloidea. The longhorn beetles were divided into several families (Crowson, 1981). Detailed examinations of their larval morphology led to further division of this group, and at least five families of them were considered to belong worldwide to the Superfamily Cerambycoidea: Vesperidae, Anoplodermatidae, Oxypeltidae, Disteniidae and Cerambycidae (Svacha & Danilevsky, 1987). Representatives of Vesperidae and

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Cerambycidae families are found in Europe, as well as in Turkey. Cerambycidae is divided into subfamilies as the following: Parandrinae, Prioninae, Lepturinae, Necydalinae, Spondylinae, Cerambycinae and Lamiinae (Svacha & Danilevsky, 1987; Bense, 1995).

Longhorn beetles have long been recognized as economic pests and excited special interest from foresters. Already by the end of the 19<sup>th</sup> century, entomologists had a good idea of the European species (Ganglbauer, 1883). Just after the Second World War, the works of Duffy (1946, 1949, 1953 and 1957) and detailed regional examinations of Heyrovsky (1955) caused a great increase in knowledge. Further publications, for example that of Palm (1954, 1959), Demelt (1956, 1963, 1966, 1967, 1976) and Horion (1974) complete the biological knowledge of many European longhorn beetles. Knowledge about European Cerambycidae larvae can be found in Svacha & Danilevsky's publications (1987, 1988, 1989). Bense (1995), made a collected presentation of European Cerambycidae based on the results of the earlier studies.

In Turkey, first intensive works on Cerambycidae species, developing in forest trees, were conducted in İstanbul, and its vicinity (Acatay, 1943; Schimitschek, 1944), in the Western Black Sea Region (Schimitschek, 1944; Defne, 1954), and Bursa forests (Çanakçıoğlu, 1956). Studies on longhorn beetles of Aegean and Mediterranean regions were conducted by Gül-Zümreoğlu (1975) and Tosun (1975). In the Eastern Anatolia Özbek (1978) gave some information on the damage of *Hylotrupes bajulus* (L.) (Coleoptera: Cerambycidae) and listed some cerambycids occurring in Erzurum province. Öymen (1987) studied the family Cerambycidae of Turkey, and gave detailed taxonomical, morphological and biological information on the species, and host plants and distribution areas in Turkey. Lodos (1998) listed a total of 584 species belonging to Cerambycidae fauna of Turkey, and pointed out that 180 of these are endemic. In the Eastern Black Sea Region, following the collections made by Schimitschek (1944), Demelt (1963), and Gfeller (1972), Sekendiz (1976, 1991) determined about 30 Cerambycidae species. The specimens in the study of Öymen (1987) were collected about at the same period in this region. Yüksel (1998) studied Cerambycidae species, as well as other insects developing in *Picea orientalis* (L.) Link.

Any information on the insect species belonging to any family in a region or a country can certainly provide many advantages. It is a reality that, about 20 % of the longhorn beetles are of great importance or interest for the timber industry and alien tree species (Hellrigl, 1974). On the other hand, in natural forests, xylophagus longhorn beetles are of great importance to the natural cycle of nutrients both by their mechanical feeding action and their digestion. For a number of European longhorn beetles a decrease in the populations has been recorded in the last 20-30 years (Horion, 1974, 1975). Both by their economical importance and by their role to sustain natural stability, new researches on Cerambycidae species to provide new information will keep its importance.

The aim of this study is to determine Cerambycidae species of the Eastern Black Sea Region, and to provide comparative analyses of the results which can be used in various studies.

## Materials and Methods

The main material in this study was about 280 adults of longhorn beetles and pupae collected from living, dying and dead forest trees up to 2500 m above sea level in the Eastern Black Sea Region from Georgian border to Melet River. Collections were made in 1998 and mostly in 1999. To identify the Cerambycidae species involved, an "Olympus 245500" stereomicroscope was utilized and the identification key in Bense (1995) was used. This key was based mainly on the studies of Lobanow et al. (1981, 1982), Danilevsky & Miroshnikov (1985) and partly on those of Svacha & Danilevsky (1987, 1988, 1989). Also, our reference material was those of Sekendiz (1974, 1976 and 1991) which were identified by British Museum (Natural History), London, and Museum d'Histoire Naturelle, Paris. The species are listed in the order within the subfamilies as given in Bense (1995).

The former works about the family Cerambycidae in Turkey carefully studied and the species identified up to now were listed and the information about morphology, biology, distribution and host plants of these species were collected. The information was compared with the results of Öymen (1987), and Lodos (1998).

Specimens identified in this work were separated according to their sexes and the length of the specimens for both sexes, and color of the certain parts and length of antennae were studied. The dates at which the specimens were found as adults or pupae, host plants and the localities were recorded. A comparative analyses was made based on the available literature concerning the distributions of the species in Turkey and their host plants in Europe and Turkey. The specimens are kept in the Entomology Laboratory of Faculty of Forestry, KTU, Trabzon.

## Results

In this study, 41 Cerambycidae species belong to Prioninae (2), Lepturinae (10), Spondyliinae (6), Cerambycinae (13) and Lamiinae (10) subfamilies were recorded in the Eastern Black Sea Region of Turkey.

### Subfamily Prioninae

#### *Ergates faber* (Linnaeus, 1767)

Average length  $42.9 \pm 1.87$  (27.0-48.4) mm in females (n=14), and  $39.8 \pm 6.21$  (30.7-44.2) mm in males (n=9). Antennae 35.0 mm and 28.0 mm in male and female, respectively. Adults collected from Trabzon (Maçka) and Artvin (Ardanuç) on *Picea orientalis* (L.) Link. in 02.VIII.1999 and 23.VII.1999.

***Prionus coriarius*** (Linnaeus, 1758)

Lengths of male specimens (n=2) 27.3 and 34.4 mm. Antennae 19.0 and 24.0 mm, and with 12 segments. Adults collected from Trabzon (Maçka-Mataracı) in 02.VIII.1999.

**Subfamily Lepturinae**

***Rhagium bifasciatum*** Fabricius, 1775

Length  $19.79 \pm 0.66$  (17.7-22.4) mm in females (n=17), and  $15.83 \pm 0.44$  (14.3-19.8) mm in males (n=17). Average length of antennae 10.73 mm in females and 10.37 mm in males. The larvae from Trabzon (Yeniay-Yataklar and Çaykara-Uzungöl) in ***P. orientalis*** in 27.VI.1998 and 14.VII.1999, became pupae in 20.VIII.1998 and 08.IX.1999 and adults emerged in 12.IX.1998 and 30.IX.1999, respectively. Adults collected from Giresun (Espiye-Karadoğa) on ***P. orientalis*** in 16.IX.1999 and 21-27.IX.1999. Adults also collected from Gümüşhane (Zigana Mountain), Artvin (Ardanuç) and Gümüşhane (Özkürtün) on ***P. orientalis*** and ***Pinus sylvestris*** L. in 24.VI.1999, 23.VII.1999 and 29.IX.1999, respectively.

***Rhagium inquisitor*** (Linnaeus, 1758)

Average length of the specimens (n=28)  $15.18 \pm 0.64$  (12.2-18.4) mm. Average length of antennae 6,08 mm. The pupae, in ***P. orientalis*** and ***P. sylvestris*** from Arvin (Ardanuç) in 17.VIII.1999, became adults between 19-31.VIII.1999. Adults also collected from Rize (İkizdere) and Artvin (Ardanuç) in ***P. orientalis*** in 12-17.VIII.1999 and 19.VIII.1999, respectively.

***Rhagium sycophanta*** (Schrank, 1781)

Average length of specimens (n=4) 16 (15.3-17.1) mm; antennae 7.25 mm. Adults found on the ground on Trabzon (Akçaabat-Hıdırnebi Plateau) in 08.VII.1999.

***Rhagium mordax*** (Degeer, 1775)

Average length of specimens (n=6) 14.52 (12.2-16.3) mm; antennae 6.83 mm in average. Adults collected in ***P. orientalis*** in Trabzon (Maçka) in 02.VIII.1999.

***Anastrangalia sanguinolenta*** (Linnaeus, 1761)

Lengths of the female specimens (n=3) 10.0, 12.7 and 14.0 mm; antennae 9.0 mm. Adults found on ***P. orientalis*** in Artvin (Şavşat) in 20.VI.1999.

***Anastrangalia dubia*** (Scopoli, 1763)

Length 13.0 mm; adult found on ***P. orientalis*** in Artvin (Şavşat) in 20.VI.1999.

***Corymbia rubra*** (Linnaeus, 1758)

Length 15.0 mm. Adult found on ***P. orientalis*** in Artvin (Şavşat) in 20.VI.1999.

***Leptura maculata*** Poda, 1761

Lengths 16.0 and 19.5 mm. Adults collected from Trabzon (Akçaabat) in 28.VI.1999.

***Leptura aurulenta*** Fabricius, 1792

Lengths of male specimens 14.7 and 15.0 mm. Adults found on *P. orientalis* in Gümüşhane (Torul) in 30.IX.1999.

***Leptura quadrifasciata*** Linnaeus, 1758

Lengths 14.7 and 15.7 mm. Specimens collected from Artvin (Ardanuç) in 23.VII.1999.

**Subfamily Spondyliinae**

***Spondylis buprestoides*** (Linnaeus, 1758)

Length 20.0 mm; antennae 5.0 mm. Adult found on *P. sylvestris* in Artvin (Ardanuç-Tosunlu) in 23.VII.1999.

***Arhopalus ferus*** (Mulsant, 1839)

Lengths 15.4 and 16.6 mm; antennae 12 and 19 mm. They were collected from Giresun (Espiye) in July 1998.

***Arhopalus rusticus*** (Linnaeus, 1758)

Lengths 20.7 and 26.1 mm. Adults found on *P. orientalis* in Artvin (Ardanuç) in 16.VIII.1999.

***Arhopalus syriacus*** (Reitter, 1895)

Length 20.2 mm; body reddish-brown; antennae 17 mm. Adult found in Gümüşhane (Özkürtün-Karanlıkdere) in 22.VII.1999.

***Tetropium castaneum*** (Linnaeus, 1758)

Length 11.8 mm; antennae 5.5 mm. Adults found on *P. orientalis* in Artvin in 22.VI.1999.

***Tetropium fuscum*** (Fabricius, 1787)

Length 12.6 mm; antenna 6.0 mm. Adult found on *P. orientalis* in Artvin (Şavşat-Karagöl) in 20.VI.1999.

**Subfamily Cerambycinae**

***Trichoferus fasciculatus*** (Faldermann, 1837)

Length of male specimen 13.2 mm. Adult found on *P. orientalis* in Trabzon (Akçaabat) in 28.VI.1999.

***Stenopterus rufus*** (Linnaeus, 1767)

Length 11.9 mm; antennae 9.0 mm. Adult collected from Trabzon (Akçaabat) in 08.VII.1999.

***Obrium brunneum*** (Fabricius, 1792)

Lengths of female specimens 5.2 and 5.5 mm; antennae 5.35 mm. Adults collected from Trabzon (Akçaabat) in 28.VI.1999.

***Cerambyx cerdo*** Linnaeus, 1758

Lengths of male specimens 40.2 and 45.0 mm. Adults collected from Artvin (Ardanuç-Tepedüzü) in 17.VIII.1999.

***Aromia moschata*** (Linnaeus, 1758)

Lengths 34.5, 35.0 in females and 37.5 mm, 26.2 mm in males. Adults collected from Trabzon (KTU Campus, Akçaabat and Maçka) in 5.IX.1998, 10.VI.1999 and 17.VII.1999.

***Hylotrupes bajulus*** (Linnaeus, 1758)

Average length  $17.58 \pm 0.84$  (14.4-20.0) mm in female (n=15) and  $11.08 \pm 1.50$  (9.0-13.4) mm in male (n=23). Adults found on ***P. orientalis*** in Trabzon (Maçka-Sındıran, Maçka-Mataracı), and Artvin (Ardanuç-Tepedüzü) in 24.VI.1999, 12-13.VII.1999, and 23.VII.1999, respectively. Adults were also found on ***P. sylvestris*** in Artvin (Ardanuç-Urut) in 19.VIII.1999.

***Callidium aeneum*** (Degeer, 1775)

Average length of the specimens (n=15)  $11.86 \pm 1.07$  (9.5-14.8) mm; antennae 11.75 mm. Adults found on ***P. orientalis*** in Rize (Çamlıhemşin) in 25.VI.1999.

***Pyrrhidium sanguineum*** (Linnaeus, 1758)

Lengths of male and female 8.8 and 9.6 mm, respectively; Adults found on ***P. orientalis*** in Gümüşhane (Zigana Mountain) in 24.VI.1999.

***Phymatodes testaceus*** (Linnaeus, 1758)

Length of male specimen 17.7 mm; antennae 24.0 mm. Adults found on ***P. orientalis*** in Artvin (Saçinka) in 21.VI.1999.

***Xylotrechus arvicola*** (Olivier, 1795)

Length 17.4 mm. Adult found in Trabzon (Maçka) in 01.VIII.1999.

***Clytus arietis*** (Linnaeus, 1758)

Length 9.0 mm. Adult found in Artvin (Ardanuç-Tosunlu) in 23.VII.1999.

***Plagionotus speciosus*** (Adams, 1817)

Length of female specimen 19.0 mm. Adult found in Trabzon (Uzungöl) in 14.VII.1999.

***Isotomus speciosus*** (Schneider, 1787)

Average length of the specimens (n=7)  $16.68 \pm 2.23$  (12.3-20.2) mm; antennae 13 mm. Adults found on ***P. orientalis*** in Gümüşhane (Kürtün) and Trabzon (Maçka) in 23.VI.1998 and 17.VII.1999.

### Subfamily Lamiinae

#### ***Morimus asper*** (Sulzer, 1776)

Average lengths 26 mm (22.5-32.5) in males (n=6) and 24 mm (18.5-27.3) in females (n=5). Adults found on ***Alnus glutinosa*** (L.) Gaertn. in Rize (İkizdere) in 22.V.1999, on ***P. orientalis*** in Trabzon (Akçaabat-Hıdırnebi Plateau, Yomra-Oymalı Pınar Plateau and Maçka-Mataracı) in 08-17.VII.1999 and 01.VIII.1999, on ***P. sylvestris*** in Artvin (Ardanuç-Ovacık), Rize (Pazar), Artvin Borçka-Camili and Trabzon (Çamburnu-Kuruçeşme) in 16.VIII.1999, 20-23.IX.1999, and 30.XII.1999, respectively.

#### ***Monochamus galloprovincialis*** (Olivier, 1795)

Lengths 19.4, 20.7 mm in males and 18.5, 23 mm in females. Adults found on ***P. orientalis*** in Artvin (Şavşat-Karagöl, Kafkasör and Ardanuç-Tosunlu) in 20-22.VI.1999 and 23.VII.1999.

#### ***Pogonocherus hispidus*** (Linnaeus, 1758)

Length 6.5 mm. Adult found in Artvin (Ardanuç-Tosunlu) in 22.VI.1999.

#### ***Pogonocherus hispidulus*** (Piller, 1783)

Length 7.0 and 7.2 mm. Adults found in Artvin (Şavşat) in 09.VIII.1999.

#### ***Pogonocherus caroli*** Mulsant, 1863

Average length of the specimens (n=4)  $7.82 \pm 0.24$  (7.5-8.5) mm; Adults found on ***P. orientalis*** in Rize (Pazar) in 19.VI.1999.

#### ***Acanthocinus aedilis*** (Linnaeus, 1758)

Length of male specimens 15.3 and 18.0 mm; antennae 72.0 mm. Pupae collected in ***P. sylvestris*** in Giresun (Espiyeye-Karadoğa) in 16.IX.1999 and adults emerged in 26.IX.1999.

#### ***Acanthocinus griseus*** (Fabricius, 1792)

Length of male specimens 10.5, 11.0, 11.4, 13.0 mm; antennae 33 mm. Adults found on ***P. orientalis*** in Trabzon (Akçaabat) in 10.VI.1999.

#### ***Saperda scalaris*** (Linnaeus, 1758)

Lengths 15.4 and 17.0 mm in female and 12.7 mm in male; antennae 15 mm in females and 13 mm in male. Adults found on ***P. orientalis*** in Trabzon (Akçaabat) in 29.VIII.1999.

#### ***Saperda populnea*** (Linnaeus, 1758)

Lengths 10.0, 11.2, 11.7 mm in females and 9.5, 9.6 in males; average length of antennae 9.5 mm. Adults collected in Trabzon (Akçaabat) in 29.VIII.1999.

#### ***Phytoecia nigripes*** (Voet, 1778)

Average length (n=43)  $13.8 \pm 0.26$  (11.5-15.5) mm. Adults were collected from Rize (İkizdere), Trabzon (Akçaabat) and Artvin (Kafkasör) in 17.VI.1998, 22.V.1999, 10.VI.1999, and 22.VI.1999, respectively.

## Discussion

Of the species given above, *E. faber*, *S. buprestoides*, *A. rusticus*, *T. castaneum*, *T. fuscum*, *A. aedilis*, *A. griseus*, *A. rubra*, *A. dubia*, *A. sanguinolenta*, *M. galloprovincialis*, *A. ferus*, and *P. caroli* develop only in coniferous trees, especially in *Pinus*, *Picea* and *Abies* (Conrad, 1982; Çanakçioğlu & Mol, 1998; Demelt, 1956, 1966; Öymen, 1987; Palm, 1984; Sama, 1988). *S. buprestoides*, *A. rusticus*, *A. aedilis*, *A. rubra* also develop in *Larix*, and *E. faber* in *Larix* and *Cedrus* (Duffy, 1957; Svacha & Danilevsky, 1987; Teppner, 1969; Villiers, 1978). *A. rubra* only as an exception develops in *Quercus* (Demelt, 1966; Duffy, 1953).

*L. maculata*, *L. aurulenta*, *S. rufus*, *C. cerdo*, *P. sanguineum*, *P. testaceus*, *X. arvicola*, *C. arietis* and *I. speciosus* develop in broadleaf trees such as *Quercus*, *Carpinus*, *Fagus*, *Castanea*, *Ulmus*, *Prunus*, *Betula*, *Acer*, *Ostrya*, *Juglans*, *Aesculus*, *Pyrus*, *Malus*, *Tilia*, *Morus* (Demelt, 1976; Svacha & Danilevsky, 1988; Teppner, 1965). *P. sanguineum*, *C. arietis* and *C. cerdo* also rarely develop in *Pinus*, *Juniperus* and *Cupressus*, respectively (Çanakçioğlu, 1956; Demelt, 1976; Duffy, 1957; Gül-Zümreoğlu, 1975; Hellrigl, 1974; Sama, 1988; Schimitschek, 1944; Svacha & Danilevsky, 1988; Villiers, 1978). Also *L. aurulenta* probably, and *L. maculata* occasionally develop in conifers such as *Pinus*, *Picea*, *Abies* (Demelt, 1966; Horion, 1974).

*A. moschata* develops especially in *Salix*, sometimes in *Populus*, *Alnus* and rarely in *Acer* (Çanakçioğlu, 1956; Demelt, 1966; Öymen, 1987), and *S. populnea* in *Populus tremula* and other *Populus* and *Salix* species (Duffy, 1957; Sama, 1988; Sekendiz, 1974, 1976; Teppner, 1969; Villiers, 1978).

*P. coriarius*, *R. bifasciatum*, *R. inquisitor* and *H. bajulus* develop in coniferous trees such as *Pinus*, *Picea*, *Abies* and broadleaf trees such as *Quercus*, *Fagus*, *Castanea*, *Alnus*, *Betula*, *Corylus* (Becker, 1976; Conrad & Nüssler, 1981; Hellrigl, 1974; Svacha & Danilevsky, 1988, 1989). *R. inquisitor* also develops in *Juniperus* (Tosun, 1975) and *Cedrus* (Hellrigl, 1974). Similarly, *O. brunneum* and *C. aeneum* develop in *Abies*, *Pinus*, *Larix*, *Picea*, *Juniperus* and rarely in *Fagus*, *Quercus* and *Acer* (Bense, 1995; Svacha & Danilevsky, 1988).

*R. mordax*, *L. quadrifasciata*, *M. asper*, *P. hispidulus*, *S. scalaris* mostly develop in one or a few of broadleaf trees such as *Fagus*, *Quercus*, *Castanea*, *Acer*, *Betula*, *Populus*, *Tilia*, *Alnus*, *Corylus* and in coniferous trees such as *Abies*, *Picea*, *Pinus*, *Larix*, *Cedrus* (Demelt, 1966; Duffy, 1953, 1957; Fraser, 1950; Horion, 1974; Schimitschek, 1944; Svacha & Danilevsky, 1989; Teppner, 1969; Villiers, 1978).

*P. testaceus*, known to develop only in broadleaf trees (Acatay, 1943; Duffy, 1957; Öymen, 1987; Schimitschek, 1944; Svacha & Danilevsky, 1988; Villiers, 1978), was found on decaying fallen *P. orientalis* in Artvin-Saçınka (Alkan, 2000). *P. sanguineum*, *P. hispidulus* and *S. scalaris*, known to develop in broadleaf trees (Acatay, 1943; Fraser, 1950; Öymen, 1987) and rarely



in coniferous trees such as *Pinus*, *Larix* (Bense, 1995; Svacha & Danilevsky, 1988), were found mostly on *P. orientalis* (Alkan, 2000; Yüksel, 1998). *M. galloprovincialis*, known to develop in some *Pinus* species (Demelt, 1963; Erdem, 1947; Öymen, 1987; Sekendiz, 1976; Tosun, 1975), was found on *P. orientalis* (Alkan, 2000; Yüksel, 1998) same density with *Pinus* in Turkey. *S. populnea* was found on *Populus tremula*, *P. nigra* and also on *Populus x euroamericana* (Sekendiz, 1974, 1976).

*A. moschata* cause important damages in *Salix babylonica* L., which is used as ornamental or shadow tree in various places (Acatay, 1943; Alkan, 2000; Çanakçioğlu, 1956; Kanat, 1998; Öymen, 1987). *H. bajulus* is a very important destructive wood species (Acatay, 1943; Çanakçioğlu, 1956; Defne, 1954; Demelt, 1963; Gül-Zümreoğlu, 1975; Kanat, 1998; Öymen, 1987; Özbek, 1978; Schimitschek, 1944; Sekendiz, 1976; 1991; Tosun, 1975; Yüksel, 1998) which can be seen in different altitudes from sea level to alpine zone.

Of these species, *R. scyophanta*, *L. aurulenta*, *L. maculata*, *A. ferus*, *T. fasciculatus*, *I. speciosus*, *P. nigripes*, *P. sanguineum*, *P. testaceus* and *P. speciosus* are new records for Cerambycidae fauna of the region.

*E. faber*, *P. coriarius*, *R. bifasciatum*, *R. inquisitor*, *C. rubra*, *A. rusticus*, *S. rufus*, *C. cerdo*, *H. bajulus*, *M. galloprovincialis*, *A. aedilis*, *A. griseus*, *S. populnea* were present in Black Sea, Marmara, Aegean, and in the western part of Mediterranean regions. (Acatay, 1943; Çanakçioğlu, 1956; Defne, 1954; Demelt, 1963, 1967; Erdem, 1947; Ekici, 1971; Gül-Zümreoğlu, 1975; Öymen, 1987; Schimitschek, 1944; Sekendiz, 1974, 1976, 1991; Tosun, 1975; Yüksel, 1998). *M. galloprovincialis* was also present in Kars (Sarıkamış) (Erdem, 1947), *H. bajulus* in Erzurum (Özbek, 1978), *A. griseus* in Adana (Demelt, 1967), and *E. faber*, *P. coriarius*, *C. cerdo*, *H. bajulus* and *S. populnea* in Kahramanmaraş (Kanat, 1998).

*C. arietis*, *M. asper*, *P. testaceus* and *P. hispidulus* were found in Artvin, Rize, Trabzon, Gümüşhane, Giresun provinces in the northeast (Alkan, 2000; Gfeller, 1972; Öymen, 1987; Yüksel, 1998) and in İstanbul in the northwest (Acatay, 1943; Demelt, 1963; Öymen, 1987; Schimitschek, 1944). The first three species were found in Erzurum (Tercan) (Öymen, 1987), Sinop (Ayancık) (Schimitschek, 1944) and Hatay (Dört Yol) (Öymen, 1987) respectively.

*R. mordax*, *A. dubia* and *S. buprestoides* were found in Artvin, Rize, Trabzon, Giresun and Ordu provinces in the Eastern Black Sea Region (Alkan, 2000; Öymen, 1987; Sekendiz, 1976; Yüksel, 1998) and in Sinop, Kastamonu, Bolu, Karabük in the Western Black Sea Region (Öymen, 1987; Schimitschek, 1944). *S. buprestoides* was also found in Kars (Sarıkamış) in the east (Erdem, 1947) and Bursa (Keles) in the west (Çanakçioğlu, 1956). *T. castaneum* was found in Artvin (Alkan, 2000), Bolu, Düzce and Zonguldak (Defne, 1954; Öymen, 1987).

*L. quadrifasciata*, *P. sanguineum* and *S. scalaris* were found only in Trabzon (Alkan, 2000; Öymen, 1987; Sekendiz, 1976; Yüksel, 1998) and

İstanbul (Acatay, 1943; Öymen, 1987). *L. maculata* was found in Trabzon (Akçaabat) (Alkan, 2000) and Sinop (Ayancık) (Schimitschek, 1944), in İstanbul (Demelt 1963; Öymen, 1987), in Yalova, Balıkesir (Gönen) and Çanakkale (Biga) (Gfeller, 1972).

*A. sanguinolenta*, *O. brunneum* and *C. aeneum* were found in Artvin, Rize, Trabzon (Alkan, 2000; Sekendiz, 1991; Yüksel, 1998) and Gümüşhane (Öymen, 1987). *R. sycophanta* and *T. fuscum* were found Artvin (Ardanuç and Şavşat) (Alkan, 2000; Yüksel, 1998); *P. speciosus* in Trabzon and Isparta (Eğridir) (Demelt, 1963).

The species not recorded in this study, but determined in other studies in this region are as following: Subfamily Lepturinae: *Stenocorus (Anisorus) quercus* (Goetz, 1783), *Dinoptera (Acmaeops) collaris* (Linnaeus, 1758) and *Alosterna tabacicolor* (Degeer, 1775) in Rize (İkizdere, Gündoğdu) and in Artvin (Öymen, 1987); *Grammoptera ustulata* (Schaller, 1783), *G. variegata* (Germar, 1824) (syn. *G. abdominalis* (Stephens, 1831)) and *Pedostrangalia (Strangalia) revestita* (Linnaeus, 1767) in Gümüşhane (Torul and Zigana Mountain) (Gfeller, 1972); *Pachytodes (Judolia) cerambyciformis* (Schrank, 1781) in Trabzon (Meryemana) (Sekendiz, 1976); *Anoplodera rufipes* (Schaller, 1783) in Gümüşhane (Zigana Mountain) (Gfeller, 1972) and Trabzon (Maçka) (Öymen, 1987); subfamily Spondylinae: *Asemum striatum* (Linnaeus, 1758) in Gümüşhane (Zigana Mountain) (Gfeller, 1972); subfamily Cerambycinae: *Stromatium fulvum* (Villers, 1789) in Trabzon (Akçaabat) (Sekendiz, 1976); *Molorchus umbellatarum* (Schreber, 1759) in Trabzon (Maçka) (Öymen, 1987); *Cerambyx scopoli* Fuesslins, 1775 in Trabzon (Meryemana) (Schimitschek, 1944) and in Artvin (Saçınka) (Sekendiz, 1976); *Purpuricenus kaehleri* (Linnaeus, 1758) in Rize (Pazar) (Sekendiz, 1976); *Rosalina alpina* (Linnaeus, 1758), *Ropalopus macropus* (Germar, 1824), *Plagionotus arcuatus* (Linnaeus, 1758), *Chlorophorus varius* (Müller, 1766) in Giresun, Trabzon, Artvin (Saçınka) and in Trabzon (Meryemana) (Sekendiz, 1976); *C. figuratus* (Scopoli, 1763) in Gümüşhane (Torul) (Gfeller, 1972) and Trabzon (Maçka) (Öymen, 1987); *Anaglyptus mysticus* (Linnaeus, 1758) in Gümüşhane (Torul) (Gfeller, 1972); subfamily Lamiinae: *Morimus verecundus* Fald. 1836 in Trabzon (Meryemana) (Demelt, 1963; Schimitschek, 1944) and in Gümüşhane (Torul) (Sekendiz, 1976); *Lamia textor* (Linnaeus, 1758) in Trabzon (Meryemana and Hamsiköy) (Sekendiz, 1976) and (Öymen, 1987); *Leiopus nebulosus* (Linnaeus, 1758), *Saperda punctata* (Linnaeus, 1767) in Artvin (Saçınka) and Trabzon (Akçaabat) (Sekendiz, 1976); *S. octopunctata* (Scopoli, 1772) in Trabzon (Öymen, 1987). Genus names given in the parenthesis were used by authors who determined the species.

## Özet

### Türkiye Doğu Karadeniz Bölümü Cerambycidae (Insecta: Coleoptera) faunasına katkılar

Bu çalışmada, Doğu Karadeniz Bölümünde, 41 Cerambycidae türünün varlığı saptanmıştır. Bu türlerden, *Rhagium sycophanta* (Schrank), *Leptura aurulenta*

Fabricius, *L. maculata* Poda *Arhopalus ferus* (Mulsant), *Trichoferus fasciculatus* (Faldermann), *Isotomus speciosus* (Adams), *Phytoecia nigripes* (Voet), *Pyrrhidium sanguineum* (Linnaeus), *Phymatodes testaceus* (Linnaeus) ve *Plagionotus speciosus* (Adams) Doğu Karadeniz Bölgesi Cerambycidae faunası için yeni kayıtlardır. Eşeylere göre örneklerin boy ve anten uzunlukları incelenmiştir. Bu türlerin Avrupa ve Anadolu'daki konukçu bitki türleri ile Türkiye'deki yayılışları değerlendirilmiştir.

## Literature

- Acatay, A., 1943. İstanbul Çevresi ve Bilhassa Belgrad Ormanındaki Zararlı Orman Böcekleri, Mücadeleleri ve İşletme Üzerine Etkileri. Zir. Vek. Yük. Zir. Enst. Çal. Sayı: 142, 163 s.
- Alkan, H., 2000. Türkiye Orman Cerambycidae (Insecta, Coleoptera)'lerinin Tanıtımı ve Doğu Karadeniz Bölgesi'ndeki Türlerin Araştırılması. KTÜ Fen Bilimleri Enstitüsü Orman Mühendisliği Anabilim Dalı, Basılmamış, Yüksek Lisans Tezi, Trabzon, 228 s.
- Becker, H., 1976. Über die Verbreitung des Hausbockkäfers *Hylotrupes bajulus* (L.) Serville (Col., Cerambycidae). III. Mitteilung. *Zeitschr. angew. Ent.*, **80**: 272-275.
- Bense, U., 1995. Longhorn Beetles Illustrated Key to the Cerambycidae and Vesperidae of Europe. Margraf, Germany, 512 pp.
- Conrad, R. & H. Nüssler, 1981. Die Verbreitung des Sägebockkäfers (*Prionus coriarius* L.) in den südlichen und mittleren Bezirken der DDR (Insecta, Coleoptera, Cerambycidae). *Faun. Abh. Mus. Tierk. Dresden*, **8** (14): 131-141.
- Conrad, R., 1982. Zur Erfassung der Vorkommen von *Ergates faber* (L.) im Süden der DDR. *Ent. Nachr. Ber.*, **26** (6): 282-283.
- Crowson, R.A., 1981. The Biology of the Coleoptera. Academic Press, London, 802 pp.
- Çanakçoğlu, H., 1956. Bursa Ormanlarında Entomolojik Araştırmalar. İstanbul Üniversitesi Basımevi, Yayın No: 690, İstanbul, 41 s.
- Çanakçoğlu, H. & T. Mol, 1988. Orman Entomolojisi, Zararlı ve Yararlı Böcekler. İstanbul Üniversitesi Orm. Fak. Yayınları, Rektörlük No.: 4063, Fakülte : 451, İstanbul, 541 s.
- Danilevsky, M.L. & A.I. Miroshnikov, 1985. Zhuki-drovoseki Kavkaza (Coleoptera, Cerambycidae). Opredelitel. (Timber beetles of Caucasus. An identification key). Krasnodar, USSR, 428 pp.
- Defne, M.Ö., 1954. Batı Karadeniz Bölgesindeki Göknarların Zararlı Böcekleri ve Mücadele Metotları. Orman Umum Müdürlüğü, Yayın No: 12, İstanbul, 228 s.
- Demelt, C., 1956. Beitrag zur Biologie von *Monochamus galloprovincialis* Oliv. *Variation pistor* Germ. und *Monochamus saltuarius* Gelb. *Ent. Blätter*, **52**: 38-42.
- Demelt, C., 1963. Beitrag zur Kenntnis der Cerambycidenfauna Kleinasiens und 13. Beitrag zur Biologie palaearkt. Cerambyciden, sowie Beschreibung einer neuen *Oberea*-Art. *Ent. Blätter*, **59** (3): 132-151.
- Demelt, C., 1966. Bockkäfer oder Cerambycidae. I. Biologie mitteleuropäischer Bockkäfer unter besonderer Berücksichtigung der Larven. Aus dem Buch von Dahl, F., Die Tierwelt Deutschland und der angrenzenden Meeresteile, Teil 52. II, Jena, 115 ss.
- Demelt, C., 1967. 1. Nachtrag zur Kenntnis der Cerambyciden-Fauna Kleinasiens. *Ent. Blätter*, **63**: 106-109.
- Demelt, C., 1976. Eine neue *Cerambyx*-Art aus Ost-Anatolien. *Zeitschr. Arbeitsgem. österr. Ent.*, **28** (1-3): 65-67.
- Duffy, E. A. J., 1946. A contribution towards the biology of *Prionus coriarius* L. (Coleoptera, Cerambycidae). *Trans. R. ent. Soc.*, **97**: 419-442.

- Duffy, E. A. J., 1949. A Contribution towards the biology of *Aromia moschata* L., the "musk" beetle. **Proc. S. Lond. Ent. Nat. Hist. Soc.**, **1947-48**: 82-110.
- Duffy, E. A. J., 1953. A monograph of the immature stages of British and imported timber beetles (Cerambycidae). Jarrold and Sons Ltd., Norwich, United Kingdom, 349 pp.
- Duffy, E. A. J., 1957. A Monograph of the Immature Stages of African Timber Beetles (Cerambycidae). British Museum (Natural History) Jarrold and Sons Ltd., London, 337 pp.
- Ekici, M., 1971. Sedir (*Cedrus libani* Barr.) Zararlı Böceklerin Biyolojisi ve Mücadelesi, Ormancılık Araştırma Enstitüsü Yayını, Teknik Bülten, Seri No: 45, 456 s.
- Erdem, R., 1947. Sarıkamış Ormanlarında Entomolojik Mücadeleler. T.C. Tarım Bakanlığı, Orman Genel Müdürlüğü Yayını, Özel Sayı 52, Ankara, 175 s.
- Fraser, M. G., 1950. Further notes on the biology of *Saperda scalaris* L. (Col., Cerambycidae). **Ent. Mon. Mag.**, **86**: 73.
- Ganglbauer, L., 1883. Bestimmungs-Tabellen der europäischen Coleopteren. Cerambycidae. **Verh. Zool. bot. Ges. Wien**, **31**: 681-758.
- Gfeller, W., 1972. Cerambycidae (Coleoptera) der Türkei-Persienexpedition 1970 der Herren Dr. h.c. W. Wittmer und U. v. Bothmer. **Mitt. Ent. Ges. Basel**, **22** (1): 1-8.
- Gül-Zümreoğlu, S., 1975. Ege Bölgesi Tekeböcekleri (Cerambycidae: Coleoptera) Türleri, Taksonomileri, Konukçuları ve Yayılış Alanları Üzerinde Çalışmalar. T.C. Gıda-Tarım ve Hayvancılık Bakanlığı Zir. Müc. ve Kar. Genel Müd., Teknik Bülten, 28, 208 s.
- Hellrigl, K., 1974. "Cerambycidae, p 130-202". In Schwenke, W.: Die Forstschädlinge Europas, 2. Band, Käfer, Hamburg, 202 ss.
- Heyrovsky, L., 1955. Tesarikoviti-Cerambycidae. Fauna CSSR, Cekoslovenske Akademie Ved, Prag, 5, 348 pp.
- Horion, A., 1974. Faunistik der mitteleuropäischen Käfer. Bd. 12: Cerambycidae-Bockkäfer, Überlingen, 228 ss.
- Horion, A., 1975. Nachtrag zur Faunistik der mitteleuropäischen Cerambyciden (Col.). Nachrichtenbl. **Bayer. Ent.**, **24** (6): 97-115.
- Kanat, M., 1998. Kahramanmaraş Orman Bölge Müdürlüğü ormanlarında zarar yapan önemli böcek türlerinin araştırılması. Doktora Tezi, KTÜ Fen Bilimleri Enst., Trabzon, 204 s.
- Lobanov, A.L., M.L. Danilevsky & S. Murzin, 1981. (Systematic list of longicorn beetles (Coleoptera, Cerambycidae) of the USSR I.). **Revue d'Ent. de l'URSS**, **60** (4): 784-803.
- Lobanov, A. L., M. L. Danilevsky & S. Murzin, 1982. (Systematic list of longicorn beetles (Coleoptera, Cerambycidae) of the USSR II.). **Revue d'Ent. de l'URSS**, **61** (2): 252-277.
- Lodos, N., 1998. Türkiye Entomolojisi VI (Genel, Uygulamalı ve Faunistik) (I. Basım). Ege Üniversitesi Ziraat Fakültesi Yayınları, No: 529, 300 s.
- Öymen, T., 1987. The Forest Cerambycidae of Turkey, University of Istanbul Faculty of Forestry. İstanbul, 140 pp, (Unpublished).
- Özbek, H., 1978. Erzurum ve yöresinde ev teke böceği (*Hylotrupes bajulus* (L.)) ve diğer teke böcekleri; **A. Ü. Ziraat Fakültesi Dergisi**, **9** (1): 31- 44.
- Palm, T., 1954. Biologiska iakttagelser över två svenka Cerambycider (Col.). **Opusc. Ent.** **19** (2-3): 165-172.
- Palm, T., 1959. Die Holz- und Rindenkäfer der Süd- und Mittelschwedischen Laubbäume. **Opusc. Ent. Supplem.**, **16**: 374 ss.

- Palm, T., 1984. Swedish records of *Acanthocinus griseus* F. Larvae (Col., Cerambycidae). **Ent. Tidskr.**, **105** (4): 155.
- Sama, G., 1988. Fauna d'Italia. Vol. XXV. Coleoptera, Cerambycidae. Catalogo topografico e sinonimico, Bologna, 216 pp.
- Schimitschek, E., 1944. Forstinsekten der Türkei und ihre Umwelt. Volk und Reich Verlag, Prag. Amsterdam-Berlin-Wien; 371 ss.
- Sekendiz, O.A., 1974. Türkiye Hayvansal Kavak Zararlıları Üzerine Araştırmalar. K.T.Ü. Yayın No: 62, 77-87, Trabzon, 194 s.
- Sekendiz, O.A., 1976. Doğu Karadeniz Bölümünün Önemli Teknik Hayvansal Zararlıları Üzerine Araştırmalar. KTÜ Orman Fakültesi, 61-91, Trabzon, 156 s. (Yayınlanmamış).
- Sekendiz, O.A., 1991. *Abies nordmanniana* (Stev.) Spach.'ın Doğu Karadeniz Bölümü Ormanlarındaki Zararlı Böcekleri ile Koruma ve Savaş Yöntemleri. O.G.M. No: 678, 200 s.
- Svacha, P. & M. Danilevsky, 1987. Cerambycoid Larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part 1. **Acta Univ. Carolinae, Biologica**, **30**: 1-176.
- Svacha, P. & M. Danilevsky, 1988. Cerambycoid Larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part 2. **Acta Univ. Carolinae, Biologica**, **31**: 121-284.
- Svacha, P. & M. Danilevsky, 1989. Cerambycoid Larvae of Europe and Soviet Union (Coleoptera, Cerambycoidea). Part 3. **Acta Univ. Carolinae, Biologica**, **32**: 1-205.
- Teppner, H., 1965. Über die Larven von *Xylotrechus arvicola* und *X. antilope* (Col., Cerambycidae). **Ent. Nachrichtenbl.**, **12** (4): 25-34.
- Teppner, H., 1969. Bestimmungstabelle mitteleuropäischer Lamiinae-Larven (Coleoptera, Cerambycidae) mit Bemerkungen zu deren Bio. **Verh. Zool. bot. Ges. Wien**, **108/109**: 19-58.
- Tosun, İ., 1975. Akdeniz Bölgesi İğne Yapraklı Ormanlarında Zarar Yapan Böcekler ve Önemli Türlerin Parazit ve Yırtıcıları Üzerine Araştırmalar. O.G.M. No: 612, Ankara, 201 s.
- Villiers, A., 1978. Faune des Coleopteres de France. 1. Cerambycidae. Encyclopedie ent. (Ser. A), Ed. Lechevalier, Paris, 52: 597 pp.
- Yüksel, B., 1998. Doğu Ladini (*Picea orientalis* (L.) Link.) Ormanlarında Zarar Yapan Böcek Türleri İle Bunların Yırtıcı ve Parazitleri-I (Zararlı Böcekler). DKOYA Yayın No: 4, Teknik Bülten No: 4, İnkılap Matbaacılık, Trabzon, 143 s.