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Original article (Orijinal araştırma)

A study on determination of Cerambycidae (Coleoptera) fauna of Isparta Province (Turkey)[1]

Isparta ili Cerambycidae (Coleoptera) faunasının belirlenmesi üzerine bir çalışma

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Summary

The aims of this study were to understand the faunistic composition and some ecological properties (vertical distributions and seasonality) of Cerambycidae (Coleoptera) of Isparta Province, Turkey. The study was conducted in 2009 and 2013. A total of 53 longhorn beetle species belonging to three subfamilies were collected. The great majority of the cerambycid fauna of the province is in the subfamily Lamiinae. The results showed that longhorn beetle species richness peaked in May and July. Also, the results of the study indicate that longhorn beetles have a clear vertical distribution patterns.

Keywords: Cerambycidae, Coleoptera, fauna, Isparta, Turkey

Özet

Bu çalışmada, Isparta ili Cerambycidae (Coleoptera) faunasının faunistik kompozisyonunun ve belirlenen türlerin bazı ekolojik özelliklerinin (dikey dağılışları ve mevsimsel tercihleri) belirlenmesi amaçlanmıştır. Çalışma 2009-2013 yılları arasında gerçekleştirilmiştir. Çalışma sonucunda, üç altfamilyaya ait toplam 53 teke böceği türü toplanmıştır. Tespit edilen türlerin büyük çoğunluğunu Lamiinae altfamilyasına ait türler oluşturmaktadır. Sonuçlar teke böceği tür zenginliğinin mayıs ve temmuz aylarında en yüksek olduğunu göstermiştir. Ayrıca, çalışmanın sonuçları teke böceği türlerinin belirgin bir dikey dağılış örüntüsüne sahip olduklarını ortaya koymuştur.

Anahtar sözcükler: Cerambycidae, Coleoptera, fauna, Isparta, Türkiye

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Introduction

The beetle family, Cerambycidae, is one of the largest groups of insects, with more than 35,000 species worldwide (Lawrence, 1982; Grimaldi & Engel, 2005; Švácha & Lawrence, 2014). The longhorn beetle fauna of Turkey has been studied intensively over the past several decades (Tezcan & Rejzek, 2002). According to Löbl & Smetana (2010) about 650 species and subspecies were known from Turkey.

Longhorn beetles vary greatly in body size (2.5-17 cm), morphology, coloration, and natural history (Bílý & Mehl, 1989; Bense, 1995; Linsley & Chemsak, 1997). Adult cerambycid species are phytophagous or xylophagous (Booth et al., 1990). Larvae of most longhorn beetle species are xylophagous (e.g. feeding inside living, moribund, or even decomposing wood), while for the rest of the species, larvae feed in stems or roots of some herbaceous plants (Linsley, 1959; Susana, 2009; Gnjatovic & Zikic, 2010). Some species are important pests, damaging and even killing trees and woody crops in managed and natural landscapes (Solomon, 1995; Ocete et al., 2002, 2010). Fruit and nut trees, grapes, coffee, cacao, and vegetable and field crops are all attacked by cerambycids (Linsley, 1959). In addition to their economic importance, longhorn beetles might potentially be excellent indicator species of the health of the wood decomposer community because of their habitat specificities, and also of the changes in a variety of ecological processes because of their diverse adult-feeding behaviors (such as feeding on sap, twigs, pollen, nectar and leaves) (Speight, 1989, Vance et al., 2003). It is important to detect the Cerambycidae fauna of a region because the family could potentially be used as an indicator group of the future environmental monitoring studies.

The cerambycid fauna of Turkey is still poorly known although knowledge about Turkish longhorn beetles has increased considerably in the last few decades (Breuning, 1962, 1978; Demelt & Alkan, 1962; Demelt, 1963; Acatay, 1971; Gül-Zümreoğlu, 1975; Erdem & Çanakçıoğlu, 1977; Sama, 1982; Çanakçıoğlu, 1983; Adlbauer, 1988, 1992; Önalp, 1990; Lodos, 1998; Tezcan & Rejzek 2002; Tozlu et al., 2002; Özdikmen & Çağlar, 2004; Özdikmen & Hasbenli, 2004; Özdikmen & Demirel, 2005; Özdikmen et al., 2005; Malmusi & Saltani, 2005; Danilevsky, 2010). Detailed studies of the longhorn beetle fauna have not been conducted for all provinces, including Isparta. Isparta Province is situated in southwestern Turkey between Irano-Anatolian and Mediterranean Basin biodiversity hotspots (Sargın & Okudum, 2014; Conservation International, 2016). The province is bordered by the provinces of Afyonkarahisar to the north, Konya to the east, Antalya to the south and Burdur to the southwest.

During faunistic surveys of the beetles of Isparta Province between 2009-2013, beetles were collected from different localities including specimens of longhorn beetles. Additional species of Cerambycidae, among these specimens, were determined for Isparta Province. The main aim of this study was to make contributions to the longhorn beetle fauna of Isparta Province. Another aim was to make contributions to some ecological properties, such as vertical distribution and seasonality of the species collected.

Material and Methods

Study area

Isparta Province (Figure 1) is located in the transition region between the Mediterranean and Central Anatolian climates, so features of both climates occur. However, high temperatures and precipitation characteristic for the Mediterranean coastline and relatively lower temperatures and precipitation characteristic for the Central Anatolia climate are not completely effective in the study area. In the lower-lying area in the south of the Isparta Province, the Mediterranean climate is effective, while in the north of the Isparta Province the Central Anatolian climate is effective. During winter, the latter area is colder and has lower participation than the coastal area (Sargın & Okudum, 2014). Mean annual precipitation is 508 mm and the mean annual temperature 12.2°C, with July and August being the warmest months (Turkish General Directorate of State Meteorology, 2014). The province contains mountainous coniferous forests (*Pinus brutia* Ten.*, Pinus nigra* spp. *pallasiana* (Lamb.) Asch. & Graebn., *Cedrus libani* A. Rich.*, Abies cilicica* spp*. isaurica* (Ant. & Kotschy) Carr., *Juniperus excelsa* M. Bieb.*,*

Juniperus foetidissima Willd. and *Juniperus oxycedrus* Linnaeus), vast cultivated plains and a few large freshwater lakes. Apart from extensive areas of maquis vegetation, some mountain slopes and valleys are covered by scattered oak forest stands (*Quercus cerris* Linnaeus, *Quercus coccifera* Linnaeus, and *Quercus vulcanica* Boiss. & Heldr. ex Kotschy), both abandoned coppices and wood pastures currently grazed by domestic goats (Bergner et al., 2015; Güngör et al., 2015).

Figure 1. The study area (Anonymous, 2016).

Field methods

Longhorn beetles (Cerambycidae) were collected from various habitats in Isparta Province between 2009 and 2013. Beetles were collected from the herb layer by sweep netting and from the shrub and tree layers by beating branches over an umbrella. The beetles were killed using ethyl acetate. Information, including collection dates, geodetic coordinates, altitudes and vegetation types, were recorded. For evaluating altitude differentiation, sampling areas were determined as A: 750-1000 m B: 1001-1250 m, C: 1251-1500 m, D: 1501-1750 m.

Specimens were sorted and pinned. All pinned specimens were identified to species level using the keys in Bense (1995), Harde (1966) and Breuning (1962). Beetle samples were deposited at the Biology Department of Süleyman Demirel University, Isparta, Turkey.

New records from Isparta are marked with an asterisk after the species names.

Results and Discussion

In this study, a total of 53 species and subspecies belonging to 31 genera included in Cerambycidae were recorded from Isparta Province. Species collected during the study are given below. The number of individuals examined is shown in parentheses after the date of collection.

Subfamily: Lepturinae

Tribe: Lepturinii

Genus: *Anastrangalia* Casey, 1924

1. *Anastrangalia montana* (Mulsant et Rey, 1863)*

Material examined: Isparta: Dedegöl Mountain, 37°41'13" N, 31°22'35" E, 1197 m, 17.VII.2011 (1), Leg. Ö. D. Kaya.

Genus: *Etorofus* Matshushita, 1933

2. *Etorofus pubescens* (Fabricius, 1787)*

Material examined: Isparta: Dedegöl Mountain, 37°41'13" N, 31°22'35" E, 1197 m, 17.VII.2011 (1), 37°39'06" N, 31°21'45" E, 1284 m, 17.VII.2011, (1), 37°42'38" N, 31°20'21" E, 1413 m, 17.VII.2011, (1), Leg. Ö. D. Kaya.

Genus: *Pedostrangalia* Sokolov, 1897

3. *Pedostrangalia verticenigra* (Pic, 1892)*

Material examined: Isparta: Dedegöl Mountain, 37°41'13" N, 31°22'35" E, 1197 m, 17.VII.2011 (2), Leg. Ö. D. Kaya.

Genus: *Pseudovadonia* Lobanov, Danilevsky & Murzin, 1981

4. *Pseudovadonia livida* (Fabricius, 1776)

Material examined: Isparta: Davraz, 37°48'29" N, 30°46'48" E, 1603 m, 20.VI.2010 (2); Kızıldağ National Park, 38°02'08" N, 31°22'18" E, 1476 m, 26.V.2010 (1), Kovada Lake National Park, 37°37'38.99" N, 30°52'4.58" E, 926 m, 16.V.2010 (1), Leg. Ö. D. Kaya.

Genus: *Rutpela* Nakane & K. Ohbayashi, 1957

5. *Rutpela maculata* (Poda, 1761)*

Material examined: Isparta: Dedegöl Mountain, 37°42'38" N, 31°20'21" E, 1413 m, 17.VII.2011 (2), Leg. Ö. D. Kaya.

Genus: *Stenurella* Villiers, 1974

6. *Stenurella bifasciata* (Müller, 1776)*

Material examined: Isparta: Davraz, 37°48'29" N, 30°46'48" E, 1603 m, 20.VI.2010 (2); Kızıldağ National Park, 38°02'6.49" N, 31°22'26.20" E, 1487 m, 22.V.2010 (1); Kızıldağ National Park, 38°02'08" N, 31°22'18" E, 1476 m, 26.V.2010 (1). Leg. Ö. D. Kaya.

Genus: *Stictoleptura* Casey, 1924

7. *Stictoleptura fulva* (De Geer, 1775)

Material examined: Isparta: Dedegöl Mountain, 37°41'13" N, 31°22'35" E, 1197 m, 17.VII.2011 (4), 37°39'06" N, 31°21'45" E, 1284 m, 17.VII.2011 (1), 37°42'38" N, 31°20'21" E, 1413 m, 17.VII.2011, (2), Leg. Ö. D. Kaya.

Genus: *Vadonia* Mulsant, 1863

8. *Vadonia unipunctata* (Fabricius, 1787)

Material examined: Isparta; Kızıldağ National Park, 38°02’08" N, 31°22’18" E, 1476 m, 26.V.2010 (1), 38°02’09" N, 31°22’44" E, 1375 m, 15.V.2009 (1), 38°2’01" N, 31°22’26" E, 13.VI.2010 (1) Leg. İ. Şen

Tribe: Rhagiini

Genus: *Cortodera* Mulsant, 1863

9. *Cortodera flavimana* (Waltl, 1838)

Material examined: Isparta: Kovada Lake National Park, 37°36’59" N, 30°52’26" E, 931 m, 25.IV.2010 (2), Leg. Ö. D. Kaya.

Subfamily: Cerambycinae

Tribe: Callichromatini

Genus: *Aromia* Audinet-Serville, 1834

10. *Aromia moschata* (Linnaeus, 1758)

Material examined: Isparta: Eğirdir, 37°50’43.98" N, 30°53'27.77" E, 983 m, 08.VII.2011 (2), Leg. Ö. D. Kaya.

Tribe: Callidiini

Genus: *Phymatodes* Mulsant, 1839

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

Material examined: Kızıldağ National Park, 38° 2'6.49" N, 31°22'26.20" E, 1487 m, 22.V.2010 (2) Leg. Ö. D. Kaya.

Tribe: Cerambycini

Genus: *Cerambyx* Linnaeus, 1758

12. *Cerambyx dux* (Faldermann, 1837)

Material examined: Eğirdir, 37°50'43.98" N, 30°53'27.77" E, 983 m, 08.VII.2011 (2), Leg. Ö. D. Kaya.

Tribe: Certallini

Genus: *Certallum* Dejean, 1821

13. *Certallum ebulinum* (Linnaeus, 1767)

Material examined: Isparta: Kızıldağ National Park, 38°01'55" N, 31°22'42" E, 1363 m, 26.VI.2010 (2), 38°2'01" N, 31°22'26" E, 1427 m, 13.VI.2010 (1) Leg. Ö. D. Kaya.

Tribe: Clytini

Genus: *Chlorophorus* Chevrolat, 1863

14. *Chlorophorus sartor* (Fabricius, 1781)

Material examined: Isparta: Kızıldağ National Park, 38°02'08" N, 31°22'18" E, 1476 m, 26.V.2010 (2); Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 2.V.2010 (1); 37°37'43" N, 30°52'22" E, 913 m, 11.VII.2010 (1), Leg. Ö. D. Kaya.

15. *Chlorophorus trifasciatus* (Fabricius, 1781)*

Material examined: Isparta: Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 16.VI.2010 (1); Kızıldağ, 38°01'55" N, 31°22'42" E, 1363 m, 24.VII.2010 (1), Leg. Ö. D. Kaya.

16. *Chlorophorus varius* (Müller, 1766)

Material examined: Isparta: Kovada Lake National Park, 37°36'31" N, 30°53'35" E, 910 m, 25.VII.2010 (3), Leg. Ö. D. Kaya.

Genus: *Plagionotus* Mulsant, 1842

17. *Plagionotus bobelayei* (Brullé, 1832)

Material examined: Isparta: Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 5.VI.2010, (1), Leg. Ö. D. Kaya.

18. *Plagionotus floralis* (Pallas, 1773)

Material examined: Isparta: Davraz, 37°48'29" N, 30°46'48" E, 1603 m, 20.VI.2010 (1); Kızıldağ National Park, 38°01'52" N, 31°22'27" E, 1441 m, 26.VI.2010 (4); Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 16.VI.2010 (3), 37°36'33.47" N, 30°53'45.21" E, 914m, 9.V.2010 (2), Leg. Ö. D. Kaya.

Tribe: Graciliini

Genus: *Penichroa* Stephens, 1839

19. *Penichroa fasciata* (Stephens, 1831)*

Material examined: Isparta: Kovada Lake National Park, 37°36'31" N, 30°53'35" E, 910 m, 25.VII.2010, (3), Leg. Ö. D. Kaya.

Tribe: Hesperophanini

Genus: *Trichoferus* Wollaston, 1854

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

Material examined: Isparta: Kovada Lake National Park, 37°37'32" N, 30°52'06" E, 927 m,

7-14.VIII.2010, (1), Leg. Ö. D. Kaya.

21. *Trichoferus kotschyi* Ganglbauer, 1883*

Material examined: Isparta: Kovada Lake National Park, 37°37'32" N, 30°52'06" E, 927 m,

7-14.VIII.2010, (1), Leg. Ö. D. Kaya.

Tribe: Hylotrupini

Genus: *Hylotrupes* Audinet-Serville, 1834

22. *Hylotrupes bajulus* (Linnaeus, 1758)

Material examined: Isparta: 37°45'48.59" N, 30°30'23.71" E, 1172m, 3.VII.1999, (3), Süleyman Demirel University Campus, 37°49'51.04" N, 30°31'17.77" E, 1061 m, 20.VIII.2012 (2), Leg. A. Gök, Leg. Ö. D. Kaya.

Tribe: Purpuricenini

Genus: *Calchaenesthes* Kraatz, 1863*

23. *Calchaenesthes oblongomaculata* (Guérin-Meneville, 1844)

Material examined: Isparta: Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 30.V.2010 (1), Leg. Ö. D. Kaya.

Genus: *Purpuricenus* Dejean, 1821

24. *Purpuricenus budensis* (Götz, 1783)

Material examined: Isparta: Süleyman Demirel University Campus, 37°49'59.93" N, 30°32'57.23" E, 1088 m, 08.VII.2011 (3); Kovada Lake National Park, 37°37'43" N, 30°52'22" E, 913 m, 11.VII.2010 (1), Leg. Ö. D. Kaya.

25. *Purpuricenus dalmatinus* Sturm, 1843*

Material examined: Isparta: Kovada Lake National Park, 37°37'44" N, 30°52'22" E, 914 m, 23.V.2010, (4), 30.V.2010 (1); Süleyman Demirel University Campus37°49'59.93" N, 30°32'57.23" E, 1088 m, 08.VII.2011 (1) Leg. Ö. D. Kaya.

26. *Purpuricenus desfontainii* (Fabricius, 1792)*

Material examined: Isparta: Süleyman Demirel University Campus, 37°49'59.93" N, 30°32'57.23" E, 1088 m, 08.VII.2011 (2) Leg. Ö. D. Kaya.

Subfamily: Lamiinae

Tribe: Acanthoderini

Genus: *Acanthoderes* Audinet-Serville, 1835

27. *Acanthoderes clavipes* (Schrank, 1781)*

Material examined: Isparta: 37°51'23" N, 30°28'34" E, 1102 m, 18.VI.2013, (1), Leg. Ö. D. Kaya.

Tribe: Agapanthiini

Genus: *Agapanthia* Audinet-Serville, 1835

28. *Agapanthia kirbyi* (Gyllenhal, 1817)

Material examined: Isparta: Davraz, 37°48'42"K, 30°45'13"D, 1541 m, 20.VI.2010 (1), Leg. Ö. D. Kaya.

29. *Agapanthia lateralis* Ganglbauer, 1884

Material examined: Isparta:Süleyman Demirel University Campus, 37°49'59.93" N, 30°32'57.23" E, 1088 m, 8.VIII.2011 (5), Leg. Ö. D. Kaya.

30. *Agapanthia violacea* (Fabricius, 1775)

Material examined: Isparta: Kızıldağ National Park, 38°01'37" N, 31°23'10" E, 1299 m, 1.V.2010 (3) Leg. Ö. D. Kaya.

Genus: *Calamobius* Guerin-Meneville, 1847

31. *Calamobius filum* (Rossi, 1790)

Material examined: Isparta: Davraz, 37°48'42"K, 30°45'13"D, 1541 m, 20.VI.2010 (1); Kızıldağ National Park, 38°01'37" N, 31°23'10" E,1299 m, 1.V.2010 (2); Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 1.V.2010 (4); 2.V.2010 (1) Leg. Ö. D. Kaya.

Genus: *Theophilea* Pic, 1895

32. *Theophilea cylindricollis* Pic, 1895*

Material examined: Isparta: Kovada Lake National Park, 913 m, 10.V.2011 (30); Leg. Ö. D. Kaya.

Tribe: Dorcadiini

Genus: *Dorcadion* Dalman, 1817

33. *Dorcadion anatolicum* Pic, 1900

Material examined: Isparta; Davraz 3, 3.VII.2010 (3), Davraz, 37°48'29" N, 30°46'48" E, 1603 m, 20.VI.2010 (1), Leg. Ö. D. Kaya.

34. *Dorcadion mniszechi* Kraatz, 1873*

Material examined: Isparta; Davraz 7, 3.VII.2010 (1), Leg. Ö. D. Kaya.

35. *Dorcadion smyrnense* (Linnaeus, 1757)*

Material examined: Isparta; Davraz 1, 6.VI.2010 (2), 23.V.2010, (3), Kızıldağ National Park, 38°2'6.49" N, 31°22'26.20" E, 1487 m, 22.V.2010 (1), Leg. Ö. D. Kaya.

Tribe: Lamiini

Genus: *Morimus* Brullé, 1832

36. *Morimus asper* (Sulzer, 1776)*

Material examined: Isparta: Dedegöl Mountain, 37°41'01" N, 31°21'21" E, 1277 m, 8.VII.2011 (2) Leg. Ö. D. Kaya.

37. *Morimus orientalis* Reitter, 1894*

Material examined: : Isparta: Dedegöl Mountain, 37°41'01" N, 31°21'21" E, 1277 m, 8.VII.2011 (1) Leg. Ö. D. Kaya.

Tribe: Monochamini

Genus: *Monochamus* Dejean, 1821

38. *Monochamus galloprovincialis* (Olivier, 1795)

Material examined: Isparta: Dedegöl Mountain, 37°40'01" N, 31°21'25" E, 1305 m, 8.VII.2011 (1) Leg. Ö. D. Kaya.

Tribe: Phytoeciini

Genus: *Oberea* Dejean, 1835

39. *Oberea erythrocephala* (Schrank, 1776)*

Material examined: Isparta: Davraz, 37°48'29" N, 30°46'48" E, 1603 m, 20.VI.2010 (3); Leg. İ. Şen.

40. *Oberea oculata* (Linnaeus, 1758)

Material examined: Isparta: Dedegöl Mountain, 37°42'38" N, 31°20'21" E, 1413 m, 17.VII.2011, (1), Leg. Ö. D. Kaya.

Genus: *Opsilia* Mulsant, 1863

41. *Opsilia coerulescens* (Scopoli, 1763)

Material examined: Isparta: Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 12.VII.2010, (2), Kızıldağ National Park, 38° 2'6.49" N, 31°22'26.20" E, 1487 m, 22.V.2010, (1) Leg. Ö. D. Kaya.

Genus: *Phytoecia* Dejean, 1835

42. *Phytoecia (Blepisanis) vittipennis* (Reiche, 1877)*

Material examined: Isparta: Kızıldağ National Park, 38°1'59.72" N, 31°22'35.81" E, 1383 m, 08.VIII.2010 (5), Leg. Ö. D. Kaya.

43. *Phytoecia (Helledia) armeniaca* Frivaldszky, 1878*

Material examined: Isparta: Sermet, 37°45'50" N, 30°34'03" E, 1036 m, 16.VI.2010 (1), Leg. İ. Şen.

44. *Phytoecia (Helladia) humeralis* (Waltl, 1828)

Material examined: Isparta: Kızıldağ National Park, 38° 1'59.72" N, 31°22'35.81" E, 1383 m, 08.VIII.2010 (2), 18.V.2010 (2); Leg. Ö. D. Kaya.

45. *Phytoecia (Helladia) praetextata* (Steven, 1817)*

Material examined: Isparta: Kızıldağ National Park, 37°36'59" N, 30°52'26" E, 931 m, 25.IV.2009 (1), Leg. İ. Şen.

46. *Phytoecia (Helladia) millefolii* (Adams, 1817)*

Material examined: Isparta: Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 30.V.2010 (1), Leg. Ö. D. Kaya.

47. *Phytoecia (Phytoecia) caerulea* spp. *baccueti* Brullé, 1832

Material examined: Isparta: Kızıldağ National Park, 18.V.2010 (2); Sivritepe, 37°49'49" N, 30°28'33" E, 1237 m, 23.IV.11 (1); Kızıldağ National Park, 38°01'51" N, 31°22'02" E, 26.IV.09 1614m (1); 38°01'37" N, 31°23'10" E, 1299 m, 1.V.2010 (1), 29.V.2010 (2), Leg. Ö. D. Kaya.

48. *Phytoecia (Phytoecia) caerulea* spp. *caerulea* Scopoli, 1772

Material examined: Isparta: Kızıldağ National Park, 38° 2'6.49" N, 31°22'26.20" E, 1487 m, 18.V.2010 (3) Leg. Ö. D. Kaya.

49. *Phytoecia (Phytoecia) cylindrica* (Linnaeus, 1758)*

Material examined: Isparta: Kovada Lake National Park, 37°36'59" N, 30°52'26" E, 931 m, 25.IV.2010 (2); Leg. Ö. D. Kaya.

50. *Phytoecia (Phytoecia) geniculata* Mulsant, 1863*

Material examined: Isparta: Sivritepe, 37°49'37.24" N, 30°27'49.13" E, 1411 m, 20.IV.2011 (1), Leg. Ö. D. Kaya.

51. *Phytoecia (Phytoecia) manicata* Reiche & Saulcy, 1858

Material examined: Isparta: Kızıldağ National Park, 38° 1'59.72" N, 31°22'35.81" E, 1383 m, 08.VIII.2010 (2), Leg. Ö. D. Kaya.

52. *Phytoecia (Phytoecia) virgula* (Charpentier, 1825)

Material examined: Isparta: Kızıldağ National Park, 38°01'37" N, 31°23'10" E, 1299 m, 1.V.2010 (2); Kovada Lake National Park, 37°36'51" N, 30°52'41" E, 913 m, 30.V.2010 (1), Leg. Ö. D. Kaya.

Tribe: Saperdini

Genus: *Saperda* Fabricius, 1775

53. *Saperda populnea* (Linnaeus, 1758)*

Material examined: Isparta: 37°51'23" N, 30°28'34" E, 1102 m, 18.VI.2013 (1), Leg. Ö. D. Kaya.

It was observed that the vast majority of Cerambycidae fauna in the research area consists of species belonging to three subfamilies, Lamiinae (51%, Figures 2 and 3), Cerambycinae (32%, Figures 2 and 4) and Lepturinae (17%, Figures 2 and 5). *Phytoecia* was represented with the highest number of species (11 species). This genus was followed by *Agapanthia*, *Chlorophorus*, *Purpuricenus* and *Dorcadion* each with three species, *Plagionotus*, *Trichoferus, Morimus* and *Oberea* each with two species, *Anastrangalia, Etorufus, Pedostrangalia, Pseudovadonia, Rutpela, Stenurella, Stictoleptura*, *Vadonia*, *Cortodera*, *Cerambyx*, *Certallum*, *Penichroa, Aromia, Hylotrupes, Calchaenestes, Saperda, Acanthoderes, Monochamus, Opsilia, Calamobius* and *Theophilea* genera each with a single species.

Cerambycidae fauna of the Mediterranean Region of Turkey (including Antalya, Burdur, Isparta, İçel, Adana, Osmaniye, Hatay, Kahramanmaraş and Kilis Provinces) was reviewed by Özdikmen (2011), which included 57 cerambycid species for Isparta Province. Sama et al. (2012) added 20 more species to the list for the province. In total, 77 longhorn beetle species had previously been recorded from Isparta Province. In this study, 53 cerambycid species belonging to 31 genera included in three subfamilies (Lepturinae, Cerambycinae and Lamiinae) were detected. Then number of species detected for each genera previously recorded in Turkey (Löbl & Smetana, 2010; Özdikmen, 2012; Sama et al., 2012) was as follows (detected/recorded): Acanthoderes (1/2), Agapanthia (3/30), Anastrangalia (1/3), Aromia (1/1), Calamobius (1/1), Calchaenesthes (1/2), Cerambyx (1/8), Certallum (1/2), Chlorophorus (3/13), Cortodera (1/23), Etorofus (1/1), Hylotrupes (1/1), Monochamus (1/2), Morimus (2/2), Oberea (2/6), Opsilia (1/1), Pedostrangalia (1/7), Penichroa (1/1), Phymatodes (1/9), Phytoecia (11/65), Plagionotus (2/6), Pseudovadonia (1/1), Purpuricenus (3/10), Rutpela (1/1), Saperda (1/7), Stenurella (1/7), Stictoleptura (1/16), Theophilea (1/1), Trichoferus (2/10), Vadonia (1/5). Among these species, 26 of them were new records, so the longhorn beetles fauna of Isparta Province has been increased to 103 species and the distribution of previously known species broadened.

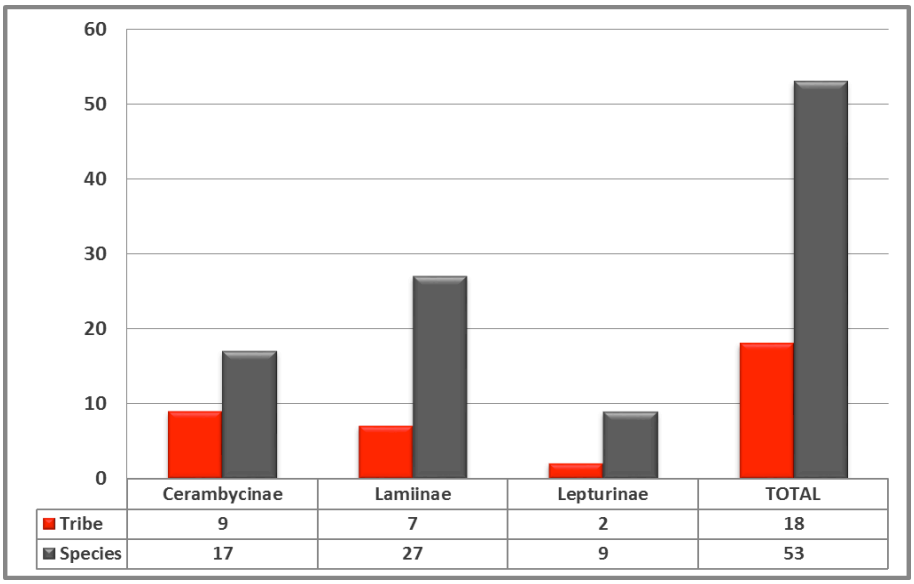

Figure 2. Number of tribes and species in the subfamilies of Cerambycidae in Isparta Province, Turkey.

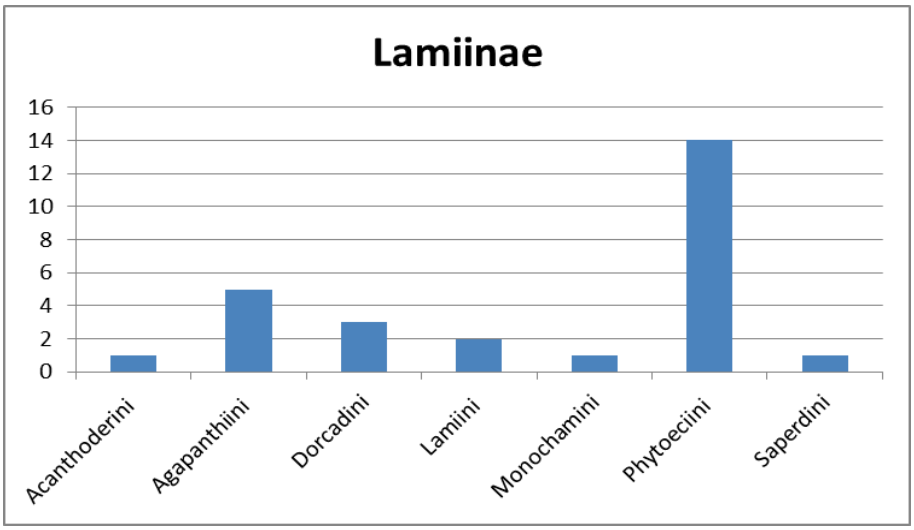

Figure 3. Number of species in tribes of the Cerambycidae tribe, Lamiinae, in Isparta Province, Turkey.

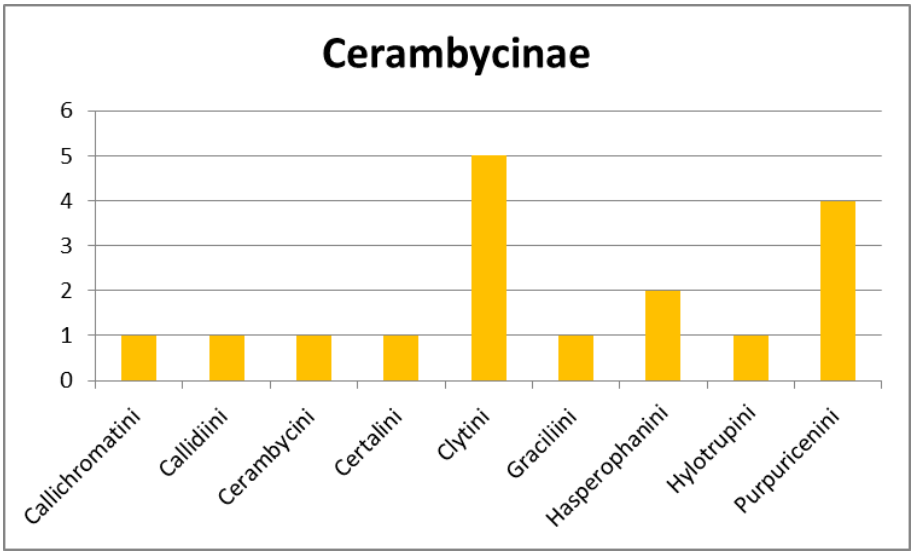

Figure 4. Number of species in tribes of the Cerambycidae tribe, Cerambycinae, in Isparta Province, Turkey.

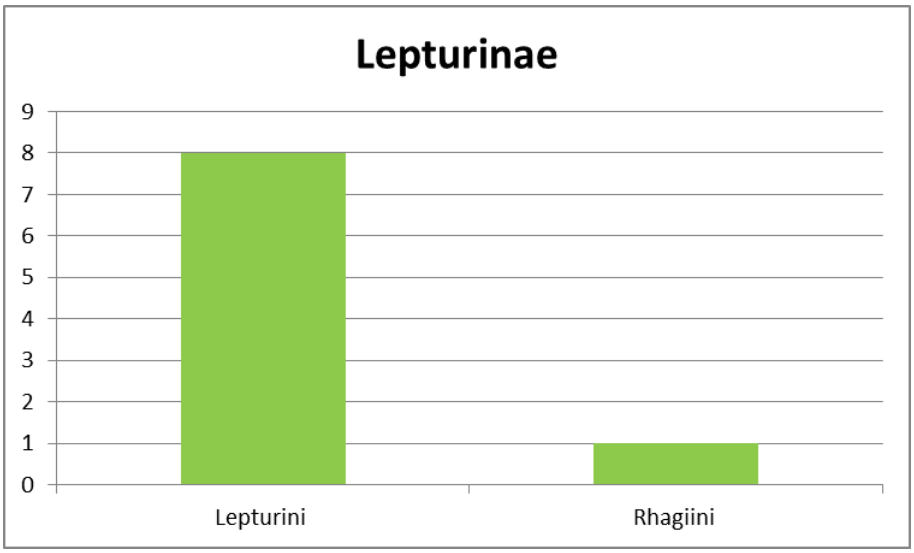

Figure 5. Number of species in tribes of the Cerambycidae tribe, Lepturinae, in Isparta Province, Turkey.

Theophilea cylindricollis had the highest number of individuals detected (30). This species was followed by *C. filum* (8), *P. caerulea baccueti*, *S. fulva* (7), *D. smyrnense*, *P. dalmatinus* (6) and *H. bajulus*, *P. vittipennis* (5).

Examination of the month of collection in the field over the two years, as well as those already in the collection of the Biology Department, Suleyman Demirel University revealed that six species had been collected 6 in April, 18 in May, 13 in June, 22 in July and 6 in August (Figures 6 and 7). It is can be seen that Cerambycidae species are most active in the May and July, followed by June. April and August had the least collections. Cerambycidae species can be monophagous, oligophagous or polyphagous in many different tree species. Adaptation to either conifers or broadleaf trees is evident in most cases (Bense, 1995). Cerambycidae is a highly plant dependent group and its development is directly influenced by factors such as temperature and humidity. Therefore climatic factors in the study area are likely to have influenced the species present in the samples.

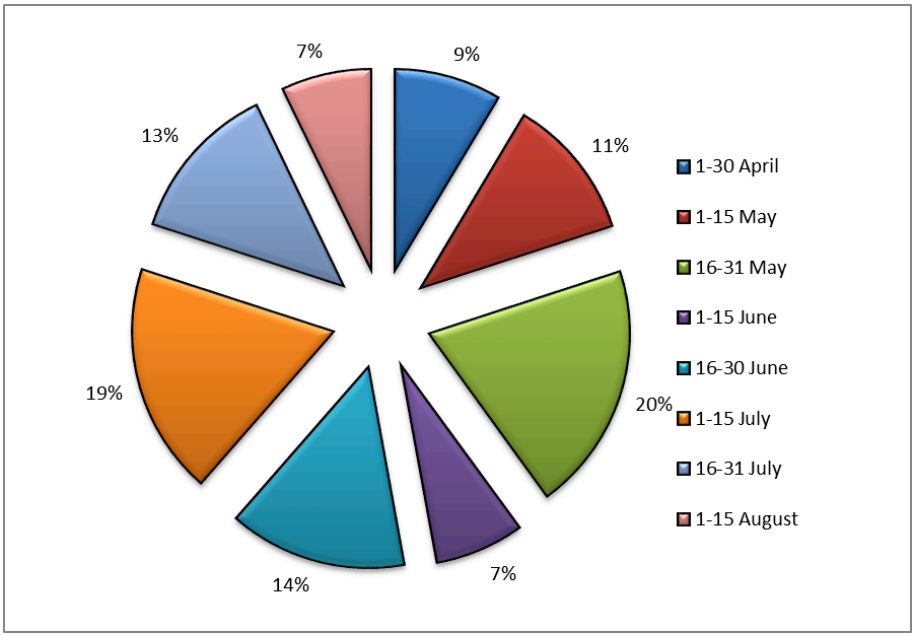

Figure 6. Percentage of Cerambycidae specimens collected from April and August in Isparta Province, Turkey.

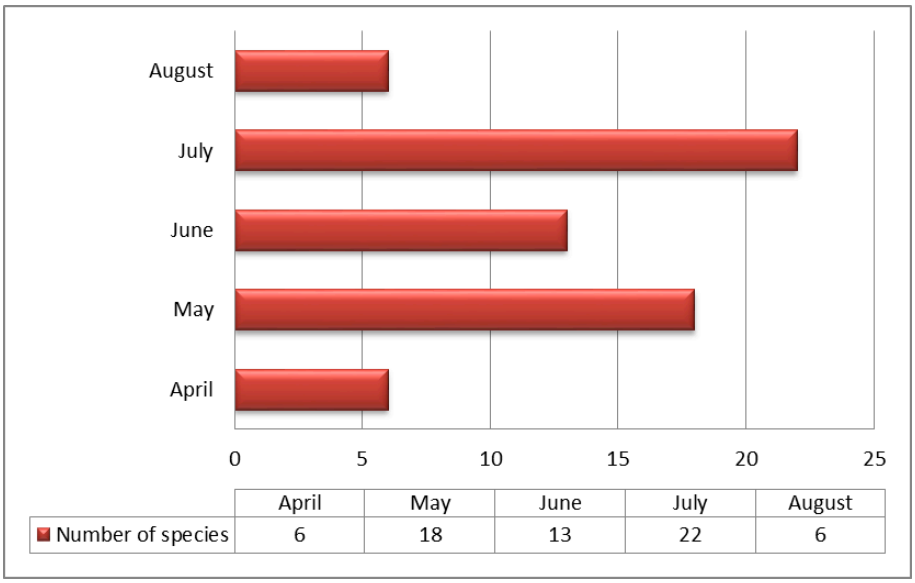

Figure 7. Number of Cerambycidae species collected from April to August in Isparta Province, Turkey.

Specimens were collected from different altitudes and vertical distributions of species exhibited differences. Evaluation of the results showed that there was differences number of species collected in each altitude range (Figure 8).

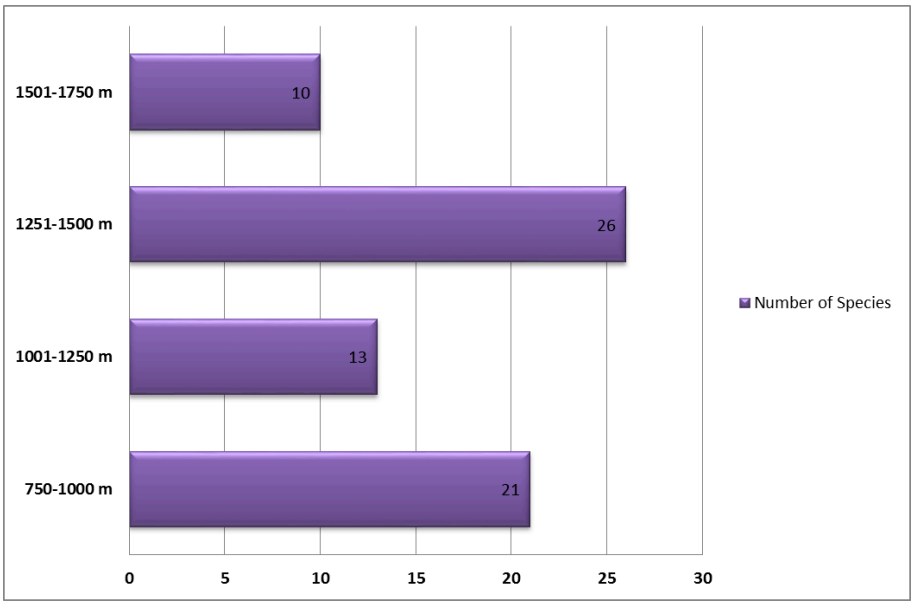

Figure 8. Number of Cerambycidae species collected in four altitude ranges in Isparta Province, Turkey.

Among the species collected, *Pedostrangalia verticenigra* (Pic, 1892) is notable because of its area of distribution. According to the distribution records, the species was previously only known from the East Black Sea Region (Artvin, Erzurum and Rize Provinces) of Turkey. It was considered a local endemic for those provinces until it was recorded on Samos Island, Greece by Dauber (2004). Although, Samos Island is close to Western Anatolia, the known distribution areas of the species are quite distant from each other. The present record shows that the species may be distributed more widely in western Turkey, but additional surveys are needed to confirm this possibility.

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