



Faunistic and Zoogeographical Studies on the Family Cleridae (Coleoptera) in Inner Western Anatolian Region of Türkiye

Türkiye'nin İç Batı Anadolu Bölgesi'nde Cleridae (Coleoptera) Familyası Üzerine Faunistik ve Zoocoğrafik Çalışmalar

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ABSTRACT

The main objective of this study is to determine the Cleridae fauna of the Inner Western Anatolia Region of Türkiye. A total of 992 samples were collected from the study area, and 16 species belonging to 6 genera of the Cleridae family were identified. The genus *Trichodes* is the richest with 10 species. The identified species were compared faunistically with Türkiye's geographical regions and the subregions of the Palearctic Region. Particularly, it was determined that most species are associated with the Eastern European fauna, showing significant overlaps with the Middle Eastern and Southern European regions. With this study, the aim is to expand the known Cleridae fauna in Türkiye and to establish a foundation for biogeographical and ecological studies in the region.

Key Words

Cleridae, Türkiye, Inner Western Anatolia, faunistik evaluations, zoogeographical evaluations.

Öz

Bu çalışmanın temel amacı, Türkiye'nin İç Batı Anadolu Bölgesi'nin Cleridae faunasının belirlenmesidir. Çalışma alanından toplamda 992 örnek toplanmış olup Cleridae familyasına ait 6 cinse ait 16 tür tespit edilmiştir. *Trichodes* cinsi 10 tür ile en zengin cinstir. Tespit edilen türler faunistik anlamda Türkiye'nin coğrafi bölgelerine göre ve Palearktik Bölgenin altbölgeleleriyle karşılaştırıldı. Özellikle, çoğu türün Doğu Avrupa faunasıyla bağlantılı olduğu, Orta Doğu ve Güney Avrupa bölgeleriyle önemli ölçüde örtüştüğü belirlendi. Bu çalışmayla, Türkiye'deki bilinen Cleridae faunasını genişletmek ve bölgedeki biyocoğrafik ve ekolojik çalışmalar için bir temel oluşturmak hedeflenmiştir.

Anahtar Kelimeler

Cleridae, Türkiye, İç Batı Anadolu, faunistik değerlendirmeler, zoocoğrafik değerlendirmeler.

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INTRODUCTION

The family Cleridae, also known as checkered beetles, is a cosmopolitan family containing predatory species [1-3]). Although clerids are found worldwide, they are more abundant in tropical and subtropical regions [4]. In the Palaearctic region, most clerids are represented by low-density populations and are almost exclusively single individuals. Clerids comprise approximately 4000 described species divided into 300 genera [1, 4, 5]. In the Palaearctic region, approximately 350 Cleridae species belonging to about 29 genera have been recorded [4, 5].

The earliest and most significant studies on the Cleridae family fauna of Türkiye were carried out by the German entomologist Zimmermann, who recorded 26 species of the genus *Trichodes* Herbst, 1792 in 1971 and 28 species of the same genus in 1973 [6, 7]. Following these studies, Bily and Brodsky [8] provided brief information on the hosts and biology of *Trichodes holtzi* Hintz, 1902, and *Trichodes creticus* Brodsky, 1982, in their work on the Eastern Mediterranean fauna. According to Öncüer [9], Türkiye's Cleridae includes one species of the genus *Allonyx* Du Val 1861, one species of the genus *Clerus* Geoffrey 1762, four species of the genus *Opilo* Latreille 1802, one species of the genus *Thanasimus* Latreille 1806, 38 species of the genus *Trichodes*, one species of the genus *Tilloidea* Laporte de Castelnau 1832 within the subfamily *Tillinae* Leach 1815, and two species of the genus *Tillus* Olivier 1790, totaling 48 species across eight genera and two subfamilies [2]. Gerstmeier [2] reports that in the Palaearctic Region, there are 49 species and 3 subspecies of the genus *Trichodes*, while in Türkiye, there are 23 species and one subspecies. The main objective of this study is to determine the faunistic composition of the Cleridae family in the Inner Western Anatolia Section, which includes the provinces of Afyonkarahisar, northeastern Denizli, Kütahya, and Uşak. From the study area, field and laboratory work has identified a total of 16 species within 6 genera and 2 subfamilies of the Cleridae family. Fifteen species were identified from the subfamily Clerinae and one from the subfamily Tillinae. Within the Clerinae subfamily, the genus *Trichodes* is the most species-rich with 10 species, followed by the genus *Thanasimus* with 2 species; the genera *Allonyx*, *Clerus*, and *Opilo* each have one species represented in the study area. The only species identified from the subfamily Tillinae belongs to the genus *Tilloidea*.

Study area

The Aegean Region is in the west of Türkiye and is bordered by the Marmara Region to the north, the Mediterranean Region to the south, the Central Anatolia Region to the east, and the Aegean Sea to the west. It is divided into two sub-regions: the Main Aegean Sub-region and the Inner Western Anatolia Sub-region (Figure 1). The Main Aegean Sub-region stretches along the western coast of the Aegean Region and has more pronounced maritime influences. Therefore, its climate is milder and more conducive to agriculture. The region's natural vegetation is maquis, and it cultivates numerous agricultural products, including olives, figs, and grapes. The Inner Western Anatolia Sub-region, located to the east of the Aegean Region, experiences more continental conditions. Its climate is harsher, with hot summers, cold and snowy winters, making it less suitable for agriculture. Unlike the coastal Aegean area, it lacks maritime influence, and factors such as altitude contribute to frequent frosts and snowfall. This difference is also reflected in the vegetation, where fruit cultivation has given way to cereal products [12].

Despite its natural steppe vegetation, the Inner Western Anatolia sub-region hosts a diverse array of tree species, including various oak species such as *Quercus cerris*, *Q. pubescens*, and *Q. infectoria*, as well as *Pinus nigra*, *Populus tremula*, *Pinus sylvestris*, *Ulmus sp.*, and *Juniperus sp.* *Pinus nigra* is found in areas above 800-900 meters on mountains such as Mount Dursunbey, Mount Alaçam, Mount Şaphane, and the Beşparmak Mountains. Some juniper species, including *J. excels* and *J. foetidissima*, are also found in clusters on the south-facing slopes of the mountains around Denizli, Afyonkarahisar, and Kütahya.

In areas with higher precipitation, various moist forest species are found, including *Fagus orientalis*, *Carpinus betulus*, *Acer platanoides*, *Acer hyrcanum subsp. keckianum*, *Tilia rubra subsp. caucasica*, *Castanea sativa*, *Tilia cordata*, *Acer campestre*, *Corylus avellana*, *Carpinus betulus*, and *Sorbus torminalis*. These species are well adapted to the cool and moist conditions common in these areas [13].

The Inner Western Anatolia section serves as a transitional area between the Main Aegean section and the Central Anatolia Region. This section consists of mountains that extend in various sequences from northwest

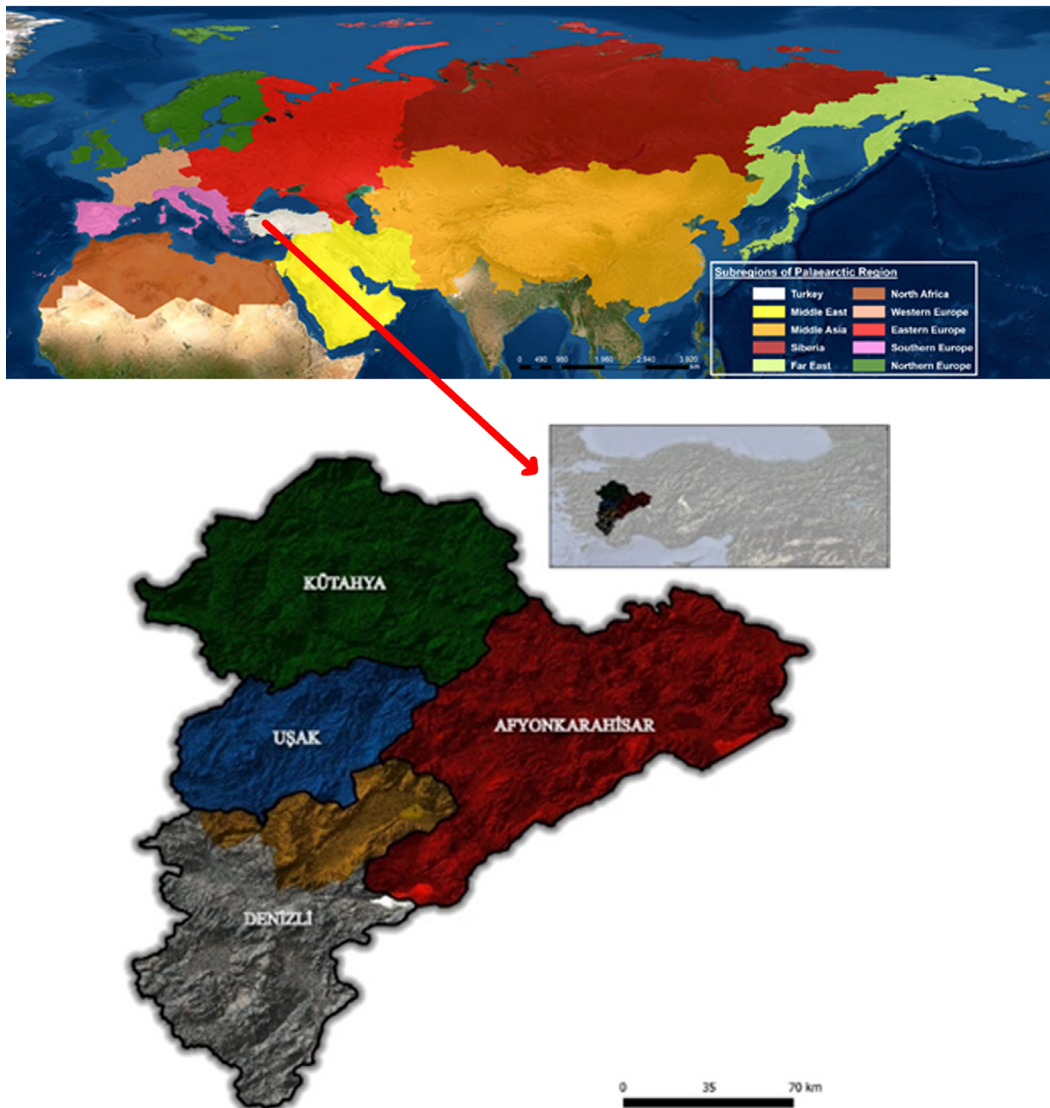


Figure 1. The topographic structure of the Inner Western Anatolia Section (from the Türkiye General Directorate of Mapping [10] and designed with ArcMAP 10.8.1 [11]).

to southeast. More than 60% of this section has an average elevation ranging between 750 meters and 1250 meters. High-altitude areas (Mount Murat 2309 m, Mount Şaphane 2120 m, Mount Simav 2089 m, Mount Emir 2307 m) make up about 1% of the region. The average elevation of the region is 715 meters. The average slope of the Aegean Region is 15.6%, and generally, it has a lower elevation profile compared to the rest of Türkiye. However, it varies between sections. The Main Aegean Section has a low elevation profile relative to Türkiye and the region, while the Inner Western Anatolia Section lacks very low and very high areas [12].

MATERIALS and METHODS

Field Studies

Field studies spanning a total of 166 days were conducted in the Inner Western Anatolia Section, which encompasses Afyonkarahisar, the northeast of Denizli, and the provinces of Kütahya and Uşak, during May-October 2019, March-October 2021, and March-October 2022 (Fig 2.).

Sampling localities were randomly selected during field-work by estimating potential suitable habitats for Cle-ridae species. A total of 1420 locations were surveyed. The chosen habitats included forested areas, meadows,

open fields, roadside and field edges, forest clearings, and the edges of streams and rivers.

The sampling strategy aimed to encompass the potential range of Cleridae species in the region by integrating various ecosystems. Both active and passive sampling methods were used during fieldwork to collect samples. Active sampling methods, which aimed to directly collect samples from specific habitats, included the use of insect collecting nets, Japanese umbrellas, and aspirator tubes. Insect collecting nets were used for sampling herbaceous vegetation at the edges of lakes, streams, roads, and forests, while Japanese umbrellas were utilized for shrubs and trees. Visible samples from vegetation that had flowered were directly collected by hand or with aspirator tubes.

Passive sampling methods included pitfall traps, light traps, and malaise traps, from which no samples were obtained. Another passive sampling method involved checking pheromone traps placed by Forest Management Directorates in the studied areas to control forest pests, with the aim of accessing these traps.

Detailed information for each location was meticulously recorded in a field notebook. This information included the geographic coordinates, elevation, air temperature, sampling method, and related habitat characteristics of the sampling site. Additionally, comprehensive photographic documentation of all sampling areas was conducted to assist in the accurate representation and visual reference of each location.

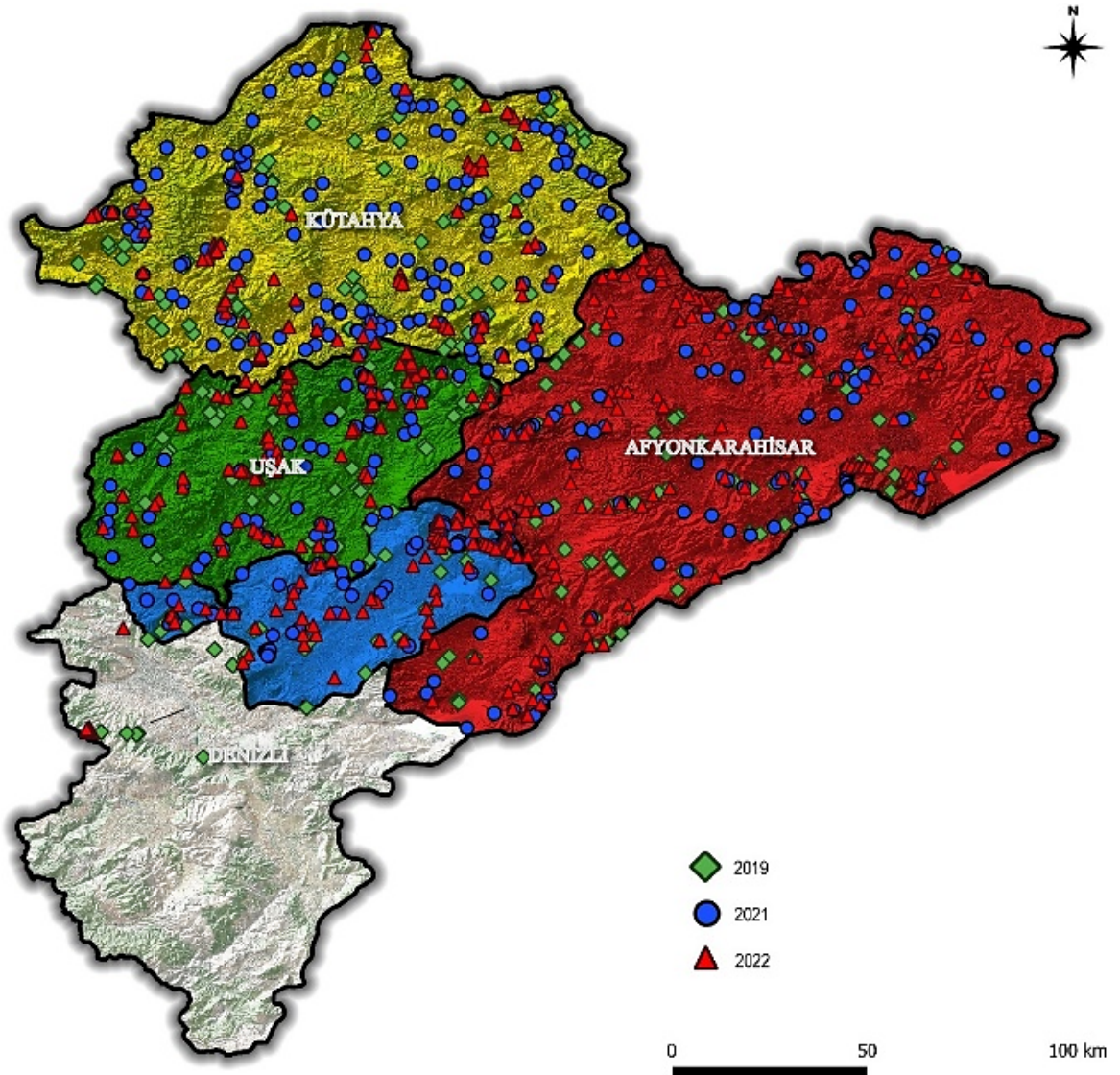


Figure 2. The topographic structure of the Inner Western Anatolia Section (from the Türkiye General Directorate of Mapping [10] and designed with ArcMAP 10.8.1 [11]).

Collected samples were killed using ethyl acetate in designated killing jars. Subsequently, all individuals, appropriately tagged with sample information reflecting the relevant locality, were transferred to the Molecular Systematic Entomology Laboratory (MOSEL) at Hacettepe University. This detailed field study, along with the collected samples, aims to significantly contribute to understanding the Cleridae species composition, distribution patterns, and habitat preferences in Türkiye's Inner Western Anatolia Section.

Laboratory Studies

After the fieldwork, 992 individuals brought to the laboratory were examined, and each specimen belonging to the Cleridae family was recorded by comparing the label information with field notebooks. The specimens were pinned into the collection using steel pins of varying numbers, lengths, and thicknesses depending on size differences.

The diagnostic process for the collected individuals began at the subfamily, tribe, and genus levels. Diagnoses of subfamilies, genera, and species were performed using descriptions and diagnostic keys available in the current literature [2, 6, 7, 14, 15]. Subsequently, sex determination was carried out, followed by species-level diagnoses. The diagnoses at the species level were supported by comparing the reproductive organs of 250 male individuals with drawings and photographs in the existing literature. The location information of the samples identified from the region is provided in Table 1.

The distributions of species were examined according to major chorotypes determined by Vigna Taglianti [16], for some invertebrate groups, certain Coleoptera families, amphibians, and reptiles, and categorized. Chorotype analysis was conducted to determine the zoogeographic composition of the Cleridae fauna in the study area.

RESULTS and DISCUSSION

This study identified 16 species within 6 genera among 992 specimens collected during field research (Fig.4). Distribution graphs (Figs. 5,6) and a table of the species across the geographical regions of Türkiye and the sub-regions of the Palearctic area are presented (Table 2).

The study also details the distribution of these species in the main chorotypes (Table 2), the percentage of species identified in chorotype regions (Table 3), and the distribution ratios according to the number of species in the main chorotypes (Fig. 6).

In field and laboratory work, a total of 16 species from 2 subfamilies and 6 genera of the Cleridae family were identified. Of these, 15 belong to the subfamily Clerinae and one to Tillinae. The genus *Trichodes*, with 10 species, is the most species-rich genus found. *Thanasimus* is the second most populous with 2 species, while the genera *Allonyx*, *Clerus*, and *Opilo* are each represented by 1 species in the study area. From the subfamily Tillinae, the only species identified belongs to the genus *Tilloidea*.

Comparative analysis with existing literature on the Turkish fauna revealed the presence of one species from the genus *Clerus* (represented by 4 species in Türkiye), one from *Opilo* (5 species), one from the monotypic genus *Allonyx*, two from *Thanasimus* (2 species), and ten from *Trichodes* (23 species) within the Central Western Anatolia Section. According to records from provincial literature, the Cleridae family is represented by one species in Afyon, four in Denizli, two in Uşak, and none recorded from Kütahya. This study has documented species on a provincial basis as follows: 14 species from Afyon, 10 from Denizli, 11 from Kütahya, and 9 from Uşak.

Species recorded for the first time from Afyon include *Clerus mutillariodes*, *Opilo taeniatus*, *Thanasimus femoralis*, *Tilloidea transversalis*, *Trichodes albei*, *Trichodes ganglbaueri*, *Trichodes laminatus*, *Trichodes nobilis*, *Trichodes punctatus*, *Trichodes quadriguttatus*, and *Trichodes suspectus*. From Denizli, first records include *Allonyx quadrimaculatus*, *Clerus mutillariodes*, *Opilo taeniatus*, *Thanasimus formicarius*, *Trichodes ganglbaueri*, and *Trichodes longissimus*. For Kütahya, first records are *Allonyx quadrimaculatus*, *Clerus mutillariodes*, *Opilo taeniatus*, *Thanasimus femoralis*, *Thanasimus formicarius*, *Tilloidea transversalis*, *Trichodes crabroniformis*, *Trichodes longissimus*, *Trichodes punctatus*, and *Trichodes quadriguttatus*. First records for Uşak include *Clerus mutillariodes*, *Opilo taeniatus*, *Thanasimus formicarius*, *Trichodes albei*, *Trichodes crabroniformis*, *Trichodes quadriguttatus*, and *Trichodes suspectus*.

Table 1. Details of collection localities.

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Allonyx quadrimaculatus</i>	1	22/09/2022	37.805164	28.801765	1086
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.807356	28.808316	1013
<i>Allonyx quadrimaculatus</i>	1	08/06/2022	39.211443	29.178044	920
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.805565	28.809117	960
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.799887	28.810659	957
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.80468	28.807373	959
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.799352	28.808575	956
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.803375	28.80492	974
<i>Allonyx quadrimaculatus</i>	1	08/06/2021	38.395805	29.822497	1235
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.803375	28.80492	974
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.79875	28.803073	956
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.802444	28.804827	972
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.808153	28.811364	951
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.798465	28.803841	952
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.807612	28.810541	949
<i>Allonyx quadrimaculatus</i>	3	08/06/2022	38.897963	29.306922	738
<i>Allonyx quadrimaculatus</i>	1	24/05/2022	37.8054	28.810104	955
<i>Clerus mutillariodes</i>	7	23/09/2021	38.568442	31.025063	1204
<i>Clerus mutillariodes</i>	4	22/09/2022	37.806573	28.802454	1099
<i>Clerus mutillariodes</i>	1	22/09/2022	37.806153	28.803474	1075
<i>Clerus mutillariodes</i>	3	24/09/2021	38.313009	30.049554	1553
<i>Clerus mutillariodes</i>	9	24/09/2021	38.361754	30.037466	1459
<i>Clerus mutillariodes</i>	6	24/09/2021	38.311613	30.056273	1520
<i>Clerus mutillariodes</i>	1	07/06/2022	38.998211	29.961026	1068
<i>Clerus mutillariodes</i>	1	24/05/2022	37.808777	28.809115	998
<i>Clerus mutillariodes</i>	1	07/06/2022	39.001185	29.820199	1293
<i>Clerus mutillariodes</i>	1	13/06/2022	39.141254	30.388746	1139
<i>Clerus mutillariodes</i>	2	16/07/2021	39.318288	28.877821	1367
<i>Clerus mutillariodes</i>	2	23/05/2022	38.36264	29.832458	1036
<i>Clerus mutillariodes</i>	7	16/07/2021	39.317151	28.928993	992
<i>Clerus mutillariodes</i>	1	07/06/2022	38.996068	29.633049	1032
<i>Clerus mutillariodes</i>	6	21/07/2022	38.36601	29.8289	1077
<i>Clerus mutillariodes</i>	1	08/06/2021	38.395805	29.822497	1235
<i>Clerus mutillariodes</i>	2	21/07/2022	38.36528	29.83035	1060
<i>Clerus mutillariodes</i>	21	23/08/2021	39.317688	28.877882	1366
<i>Clerus mutillariodes</i>	5	21/07/2022	38.41321	29.82259	1317
<i>Clerus mutillariodes</i>	9	21/07/2022	38.39219	29.82177	1216
<i>Clerus mutillariodes</i>	2	21/07/2022	38.41996	29.8295	1159
<i>Clerus mutillariodes</i>	1	08/06/2022	39.215256	29.177411	923
<i>Clerus mutillariodes</i>	1	24/05/2022	37.806789	28.811348	949
<i>Clerus mutillariodes</i>	2	21/07/2022	38.4174	29.83338	1120
<i>Clerus mutillariodes</i>	2	21/07/2022	38.4186	29.83132	1145

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Clerus mutillariodes</i>	1	23/05/2022	38.366068	29.828878	1082
<i>Clerus mutillariodes</i>	2	23/05/2022	38.353006	29.818673	963
<i>Clerus mutillariodes</i>	1	07/06/2021	38.426491	30.04082	1008
<i>Clerus mutillariodes</i>	40	26/08/2021	38.021768	29.3309	1280
<i>Clerus mutillariodes</i>	1	21/07/2022	38.417	29.83524	1089
<i>Clerus mutillariodes</i>	12	21/07/2022	38.41611	29.82785	1215
<i>Clerus mutillariodes</i>	1	21/07/2022	38.374984	29.814449	1250
<i>Clerus mutillariodes</i>	2	09/06/2022	39.120408	29.713759	1266
<i>Clerus mutillariodes</i>	1	26/05/2022	38.75423	29.631071	754.7
<i>Clerus mutillariodes</i>	3	21/07/2022	38.40166	29.83211	787.4
<i>Clerus mutillariodes</i>	9	25/07/2022	39.15154	30.47978	806.1
<i>Clerus mutillariodes</i>	6	26/08/2021	38.02197	29.325871	778.8
<i>Clerus mutillariodes</i>	1	26/05/2022	38.76001	29.63954	861.5
<i>Clerus mutillariodes</i>	3	26/08/2021	38.02214	29.33246	978.3
<i>Clerus mutillariodes</i>	5	21/07/2022	38.4122	29.82223	727.5
<i>Clerus mutillariodes</i>	2	08/06/2022	38.89796	29.306922	826.2
<i>Clerus mutillariodes</i>	1	26/08/2021	38.021	29.334378	685.3
<i>Clerus mutillariodes</i>	59	26/08/2021	38.03731	29.337186	1097.5
<i>Clerus mutillariodes</i>	1	21/07/2022	38.4169	29.82857	1029.5
<i>Clerus mutillariodes</i>	3	27/08/2021	38.35391	29.887534	981.2
<i>Clerus mutillariodes</i>	13	26/08/2021	38.03414	29.323956	1241.1
<i>Clerus mutillariodes</i>	2	21/07/2022	38.41462	29.82536	946.3
<i>Clerus mutillariodes</i>	88	26/08/2021	38.0346	29.324769	936.2
<i>Clerus mutillariodes</i>	3	08/06/2022	38.90103	29.311907	945.9
<i>Clerus mutillariodes</i>	1	27/08/2021	38.34826	29.894115	931.9
<i>Clerus mutillariodes</i>	2	27/08/2021	38.34709	29.892169	1036.3
<i>Clerus mutillariodes</i>	4	26/08/2021	38.03891	29.333471	931.3
<i>Clerus mutillariodes</i>	2	27/08/2021	38.35518	29.889501	757.7
<i>Clerus mutillariodes</i>	31	26/08/2021	38.03547	29.326295	1048.6
<i>Clerus mutillariodes</i>	5	26/08/2021	38.03882	29.332021	1226.4
<i>Clerus mutillariodes</i>	13	26/08/2021	38.03636	29.32816	1437
<i>Clerus mutillariodes</i>	8	26/08/2021	38.03801	29.330517	1579.5
<i>Clerus mutillariodes</i>	3	26/08/2021	38.03839	29.331004	1498.6
<i>Clerus mutillariodes</i>	5	26/08/2021	38.03715	29.329325	606.1
<i>Clerus mutillariodes</i>	4	26/08/2021	38.03394	29.32625	800.6
<i>Clerus mutillariodes</i>	2	26/08/2021	38.03684	29.336527	993.7
<i>Clerus mutillariodes</i>	1	27/08/2021	38.34983	29.899749	865.3
<i>Opilio taeniatus</i>	1	22/09/2022	37.80615	28.803474	888.5
<i>Opilio taeniatus</i>	1	21/05/2021	38.35182	29.767033	941.2
<i>Opilio taeniatus</i>	1	14/06/2022	38.66422	30.054859	910.1
<i>Opilio taeniatus</i>	1	16/06/2022	38.20729	30.12112	1016.5
<i>Opilio taeniatus</i>	1	26/05/2019	39.34023	29.316454	1289.8

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Opilio taeniatus</i>	1	29/05/2021	39.05625	29.083192	994.4
<i>Opilio taeniatus</i>	2	12/06/2021	38.413	28.863019	971
<i>Opilio taeniatus</i>	1	16/06/2022	38.17589	30.081513	1042.3
<i>Opilio taeniatus</i>	1	25/05/2019	38.89889	29.044462	1130.1
<i>Opilio taeniatus</i>	2	13/06/2022	39.14125	30.388746	1311.9
<i>Opilio taeniatus</i>	2	23/05/2022	38.08297	29.472728	888.5
<i>Opilio taeniatus</i>	1	23/05/2022	38.05412	29.438699	941.2
<i>Opilio taeniatus</i>	2	16/06/2022	37.9166	30.034495	910.1
<i>Opilio taeniatus</i>	1	17/06/2022	38.90627	31.061401	1016.5
<i>Opilio taeniatus</i>	1	26/05/2021	39.34038	30.211239	1289.8
<i>Opilio taeniatus</i>	1	23/05/2022	38.36264	29.832458	994.4
<i>Opilio taeniatus</i>	2	25/05/2022	38.56199	29.357599	971
<i>Opilio taeniatus</i>	3	09/06/2022	39.13922	29.719565	1042.3
<i>Opilio taeniatus</i>	1	16/06/2022	38.0074	30.114507	1130.1
<i>Opilio taeniatus</i>	1	23/05/2022	38.14737	29.555107	1311.9
<i>Opilio taeniatus</i>	1	16/06/2022	37.87848	30.130682	1088
<i>Opilio taeniatus</i>	1	26/05/2022	38.76171	29.694526	1048
<i>Opilio taeniatus</i>	1	28/05/2021	38.99488	29.838488	1272
<i>Opilio taeniatus</i>	1	27/05/2022	38.30086	29.519727	953
<i>Opilio taeniatus</i>	1	16/05/2019	38.55814	31.02812	1330
<i>Opilio taeniatus</i>	1	24/06/2021	39.41936	29.220282	755
<i>Opilio taeniatus</i>	1	22/06/2021	39.00763	29.946494	1118
<i>Thanasimus femoralis</i>	1	26/07/2022	38.9211	30.89384	1297
<i>Thanasimus femoralis</i>	4	25/04/2022	39.3145	28.830741	1266
<i>Thanasimus femoralis</i>	13	25/04/2022	39.31582	28.825213	1371
<i>Thanasimus femoralis</i>	5	07/06/2022	38.98512	29.392919	730
<i>Thanasimus femoralis</i>	2	25/07/2022	39.15154	30.47978	1213
<i>Thanasimus formicarius</i>	3	27/05/2021	39.85183	29.646153	1262
<i>Thanasimus formicarius</i>	5	23/06/2021	39.31829	28.877821	1367
<i>Thanasimus formicarius</i>	1	27/05/2021	39.85242	29.642304	1262
<i>Thanasimus formicarius</i>	1	22/09/2022	37.80516	28.801765	1086
<i>Thanasimus formicarius</i>	8	24/09/2021	38.31301	30.049554	1553
<i>Thanasimus formicarius</i>	1	24/09/2021	38.31161	30.056273	1520
<i>Thanasimus formicarius</i>	17	23/05/2019	38.92766	29.898708	1167
<i>Thanasimus formicarius</i>	1	22/09/2022	37.79845	28.803808	966
<i>Thanasimus formicarius</i>	1	23/04/2021	38.69	30.094516	1630
<i>Thanasimus formicarius</i>	3	07/06/2022	39.00119	29.820199	1293
<i>Thanasimus formicarius</i>	2	16/07/2021	39.31829	28.877821	1367
<i>Thanasimus formicarius</i>	1	17/07/2021	39.85196	29.646368	1248
<i>Thanasimus formicarius</i>	4	11/09/2019	39.02705	29.625721	1560
<i>Thanasimus formicarius</i>	4	08/06/2022	39.20685	29.182685	1023
<i>Thanasimus formicarius</i>	1	28/05/2021	39.16642	29.834923	1112

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Thanasimus formicarius</i>	3	23/05/2022	38.3626	29.830408	1031
<i>Thanasimus formicarius</i>	5	23/05/2022	38.36264	29.832458	1036
<i>Thanasimus formicarius</i>	2	16/07/2021	39.31715	28.928993	992
<i>Thanasimus formicarius</i>	39	25/04/2022	39.3145	28.830741	1266
<i>Thanasimus formicarius</i>	2	23/05/2022	38.36109	29.826103	1006
<i>Thanasimus formicarius</i>	1	23/05/2022	38.36094	29.828253	1034
<i>Thanasimus formicarius</i>	13	25/04/2022	39.31582	28.825213	1371
<i>Thanasimus formicarius</i>	4	21/07/2022	38.39219	29.82177	1216
<i>Thanasimus formicarius</i>	1	21/07/2022	38.41996	29.8295	1159
<i>Thanasimus formicarius</i>	1	23/05/2022	38.36779	29.824991	1101
<i>Thanasimus formicarius</i>	3	08/06/2022	39.25146	29.22204	746
<i>Thanasimus formicarius</i>	1	23/05/2022	38.35301	29.818673	963
<i>Thanasimus formicarius</i>	2	09/06/2022	39.12041	29.713759	1266
<i>Thanasimus formicarius</i>	1	07/06/2022	38.98512	29.392919	730
<i>Thanasimus formicarius</i>	1	26/05/2022	38.75423	29.631071	1168
<i>Thanasimus formicarius</i>	3	25/07/2022	39.15154	30.47978	1213
<i>Thanasimus formicarius</i>	13	26/05/2022	38.76001	29.63954	1138
<i>Thanasimus formicarius</i>	1	25/07/2022	39.00301	30.53616	1110
<i>Thanasimus formicarius</i>	3	25/07/2022	39.00299	30.53298	1093
<i>Thanasimus formicarius</i>	3	26/06/2019	39.19409	31.334314	868
<i>Tilloidea transversalis</i>	1	23/06/2021	38.86942	29.267975	736
<i>Tilloidea transversalis</i>	1	29/05/2021	38.95119	29.291199	690
<i>Tilloidea transversalis</i>	1	09/07/2021	39.199	31.165318	903
<i>Tilloidea transversalis</i>	3	10/07/2021	38.85286	30.599294	1047
<i>Trichodes alberi</i>	1	18/07/2019	38.485126	29.343652	832
<i>Trichodes alberi</i>	1	11/07/2021	38.670738	30.757459	998
<i>Trichodes apiarius</i>	1	24/09/2021	38.313009	30.049554	1553
<i>Trichodes apiarius</i>	1	24/09/2021	38.361754	30.037466	1459
<i>Trichodes apiarius</i>	1	13/09/2019	39.855761	29.632305	1213
<i>Trichodes apiarius</i>	1	22/08/2021	39.856946	29.631804	1210
<i>Trichodes apiarius</i>	3	11/09/2019	39.027054	29.625721	1560
<i>Trichodes apiarius</i>	1	22/08/2021	39.728413	29.63318	973
<i>Trichodes apiarius</i>	1	23/08/2021	39.317688	28.877882	1366
<i>Trichodes apiarius</i>	1	27/08/2019	38.9562	29.621376	1453
<i>Trichodes apiarius</i>	1	17/07/2021	39.728394	29.633054	961
<i>Trichodes apiarius</i>	1	15/07/2021	39.00957	29.956909	1081
<i>Trichodes apiarius</i>	1	15/07/2021	39.00957	29.956909	1081
<i>Trichodes apiarius</i>	1	15/07/2021	39.00957	29.956909	1081
<i>Trichodes apiarius</i>	2	15/07/2021	39.00957	29.956909	1081
<i>Trichodes apiarius</i>	1	14/07/2021	38.910914	30.118224	1185
<i>Trichodes apiarius</i>	1	14/07/2021	38.868524	30.07356	1168
<i>Trichodes apiarius</i>	1	14/07/2021	38.857851	29.973896	1241

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Trichodes apiarius</i>	2	24/08/2021	39.00184	29.63295	1116
<i>Trichodes apiarius</i>	1	27/08/2021	38.347093	29.892169	1129
<i>Trichodes crabrinoformis</i>	2	11/06/2021	38.419831	29.636195	885
<i>Trichodes crabrinoformis</i>	1	05/06/2021	38.713549	31.18866	973
<i>Trichodes crabrinoformis</i>	1	05/06/2021	38.713549	31.18866	973
<i>Trichodes crabrinoformis</i>	1	06/07/2019	39.033346	29.248576	1383
<i>Trichodes crabrinoformis</i>	1	15/07/2021	39.00957	29.956909	1081
<i>Trichodes crabrinoformis</i>	1	27/06/2019	38.959322	30.729231	1337
<i>Trichodes crabrinoformis</i>	2	09/06/2021	38.203863	29.662019	817
<i>Trichodes crabrinoformis</i>	1	17/07/2019	38.734498	29.163145	580
<i>Trichodes crabrinoformis</i>	1	09/07/2021	39.207744	31.287973	864
<i>Trichodes crabrinoformis</i>	1	11/07/2021	38.432361	30.629273	1187
<i>Trichodes crabrinoformis</i>	1	24/06/2021	39.412037	29.237796	670
<i>Trichodes crabrinoformis</i>	1	24/06/2021	39.412037	29.237796	670
<i>Trichodes crabrinoformis</i>	1	11/07/2021	38.670738	30.757459	998
<i>Trichodes crabrinoformis</i>	1	09/07/2021	39.164843	31.071224	1081
<i>Trichodes crabrinoformis</i>	1	19/07/2019	38.119496	29.032311	309
<i>Trichodes crabrinoformis</i>	1	11/06/2021	38.636129	29.455141	861
<i>Trichodes crabrinoformis</i>	1	11/06/2021	38.636129	29.455141	861
<i>Trichodes crabrinoformis</i>	1	13/07/2021	38.560182	29.969131	1055
<i>Trichodes crabrinoformis</i>	1	16/07/2021	39.46191	29.265742	580
<i>Trichodes ganglbaueri</i>	1	12/06/2021	38.183667	29.055612	825
<i>Trichodes ganglbaueri</i>	2	20/06/2019	38.303757	29.630825	977
<i>Trichodes ganglbaueri</i>	1	19/07/2019	38.00345	29.261413	1158
<i>Trichodes laminatus</i>	1	17/06/2022	39.117718	31.184274	986
<i>Trichodes laminatus</i>	1	14/06/2022	38.797376	30.36282	1078
<i>Trichodes laminatus</i>	2	14/06/2022	38.797376	30.36282	1078
<i>Trichodes laminatus</i>	1	14/06/2022	38.797376	30.36282	1078
<i>Trichodes laminatus</i>	1	10/07/2021	38.860267	30.645187	1106
<i>Trichodes longissimus</i>	1	24/09/2021	38.313009	30.049554	1553
<i>Trichodes longissimus</i>	1	22/09/2022	37.807455	28.808347	1025
<i>Trichodes longissimus</i>	1	22/09/2022	37.797247	28.818803	901
<i>Trichodes longissimus</i>	1	06/06/2021	38.549643	31.024834	1259
<i>Trichodes longissimus</i>	1	22/08/2021	39.856946	29.631804	1210
<i>Trichodes longissimus</i>	1	18/07/2019	38.485126	29.343652	832
<i>Trichodes longissimus</i>	1	30/06/2019	38.718029	31.205262	960
<i>Trichodes longissimus</i>	1	21/07/2022	38.36528	29.83035	1060
<i>Trichodes longissimus</i>	1	09/07/2021	39.144511	31.054139	1177
<i>Trichodes longissimus</i>	1	10/07/2021	38.92216	30.908871	1252
<i>Trichodes longissimus</i>	1	15/05/2019	39.200269	31.31742	950
<i>Trichodes longissimus</i>	1	09/06/2021	38.203863	29.662019	817
<i>Trichodes longissimus</i>	1	09/06/2021	38.203863	29.662019	817

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Trichodes longissimus</i>	1	16/07/2021	39.360511	29.224404	694
<i>Trichodes longissimus</i>	1	11/07/2021	38.522347	30.88514	1034
<i>Trichodes longissimus</i>	1	11/07/2021	38.670738	30.757459	998
<i>Trichodes longissimus</i>	1	09/07/2021	39.164843	31.071224	1081
<i>Trichodes longissimus</i>	1	23/08/2021	39.317151	28.928993	992
<i>Trichodes longissimus</i>	1	25/08/2021	38.973106	29.592241	1048
<i>Trichodes longissimus</i>	1	25/08/2021	38.973106	29.592241	1048
<i>Trichodes longissimus</i>	1	27/08/2021	38.355829	29.889384	1256
<i>Trichodes longissimus</i>	1	13/07/2021	38.560182	29.969131	1055
<i>Trichodes longissimus</i>	1	26/08/2021	38.037308	29.337186	1317
<i>Trichodes longissimus</i>	1	19/07/2022	38.839096	29.54805	1073
<i>Trichodes longissimus</i>	1	27/08/2021	38.355304	29.890639	1282
<i>Trichodes longissimus</i>	1	24/08/2021	39.00184	29.63295	1116
<i>Trichodes longissimus</i>	1	27/08/2021	38.349851	29.88842	1158
<i>Trichodes longissimus</i>	1	16/07/2021	39.46191	29.265742	580
<i>Trichodes nobilis</i>	1	19/05/2022	38.991756	31.396692	974
<i>Trichodes nobilis</i>	2	19/05/2022	38.945848	31.490641	1017
<i>Trichodes nobilis</i>	1	05/06/2021	39.024003	31.256592	939
<i>Trichodes nobilis</i>	1	04/06/2021	39.15555	31.24517	983
<i>Trichodes nobilis</i>	1	05/06/2021	38.790786	31.465674	1181
<i>Trichodes nobilis</i>	2	05/06/2021	38.81107	31.570938	1124
<i>Trichodes nobilis</i>	2	15/05/2019	39.1425	31.224444	952
<i>Trichodes punctatus</i>	2	21/05/2021	38.213267	29.408852	803
<i>Trichodes punctatus</i>	1	06/06/2021	38.564308	31.0306	1361
<i>Trichodes punctatus</i>	1	23/05/2019	39.355833	30.056579	1015
<i>Trichodes punctatus</i>	1	29/06/2019	38.297878	30.337859	1621
<i>Trichodes punctatus</i>	1	07/06/2022	39.001185	29.820199	1293
<i>Trichodes punctatus</i>	1	22/06/2021	39.032614	29.539071	1092
<i>Trichodes punctatus</i>	1	06/06/2021	38.549643	31.024834	1259
<i>Trichodes punctatus</i>	1	12/06/2021	38.309672	28.876988	961
<i>Trichodes punctatus</i>	1	12/06/2021	38.450904	28.87318	829
<i>Trichodes punctatus</i>	2	16/06/2022	37.916597	30.034495	895
<i>Trichodes punctatus</i>	1	10/06/2021	38.690992	29.58944	1076
<i>Trichodes punctatus</i>	1	06/06/2022	39.1287	30.161676	1031
<i>Trichodes punctatus</i>	2	08/06/2022	39.202007	29.175944	1023
<i>Trichodes punctatus</i>	1	04/06/2021	38.978771	31.239397	1027
<i>Trichodes punctatus</i>	1	27/05/2021	39.728394	29.633054	961
<i>Trichodes punctatus</i>	1	19/06/2019	38.569564	29.57778	863
<i>Trichodes punctatus</i>	1	23/05/2022	38.361092	29.826103	1006
<i>Trichodes punctatus</i>	2	25/05/2022	38.56199	29.357599	865
<i>Trichodes punctatus</i>	1	14/06/2022	38.797376	30.36282	1078
<i>Trichodes punctatus</i>	3	26/05/2022	38.788116	29.655492	1314

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Trichodes punctatus</i>	1	09/06/2021	38.232441	29.552029	1079
<i>Trichodes punctatus</i>	2	25/05/2022	38.268163	29.094665	665
<i>Trichodes punctatus</i>	1	20/05/2021	38.841415	29.89226	1035
<i>Trichodes punctatus</i>	1	28/05/2021	38.997108	29.66018	1063
<i>Trichodes punctatus</i>	1	22/05/2021	38.142054	29.170499	534
<i>Trichodes punctatus</i>	2	22/05/2021	38.159133	29.128605	781
<i>Trichodes punctatus</i>	2	24/05/2022	37.799724	28.80231	970
<i>Trichodes punctatus</i>	1	27/05/2021	39.716397	29.643554	889
<i>Trichodes punctatus</i>	1	23/05/2022	38.367792	29.824991	1101
<i>Trichodes punctatus</i>	2	16/06/2022	37.878479	30.130682	1212
<i>Trichodes punctatus</i>	2	21/05/2021	38.558528	29.631203	800
<i>Trichodes punctatus</i>	1	22/05/2022	38.052494	30.273887	1012
<i>Trichodes punctatus</i>	3	23/05/2022	38.353006	29.818673	963
<i>Trichodes punctatus</i>	5	26/05/2022	38.761712	29.694526	1048
<i>Trichodes punctatus</i>	1	24/05/2022	37.797185	28.818684	904
<i>Trichodes punctatus</i>	1	20/07/2022	38.64416	29.33443	771
<i>Trichodes punctatus</i>	1	27/05/2022	38.300861	29.519727	953
<i>Trichodes punctatus</i>	1	26/08/2021	38.021768	29.3309	1280
<i>Trichodes punctatus</i>	1	19/07/2019	38.115546	29.081114	1209
<i>Trichodes punctatus</i>	2	24/06/2021	39.436693	29.227555	1033
<i>Trichodes punctatus</i>	1	14/07/2021	38.929609	30.078678	1090
<i>Trichodes punctatus</i>	1	24/06/2021	39.412037	29.237796	670
<i>Trichodes punctatus</i>	1	11/07/2021	38.522347	30.88514	1034
<i>Trichodes punctatus</i>	1	03/07/2019	39.583678	30.12456	919
<i>Trichodes punctatus</i>	1	26/06/2019	39.194094	31.334314	868
<i>Trichodes punctatus</i>	3	06/06/2022	39.597945	30.051428	1020
<i>Trichodes punctatus</i>	2	17/07/2021	39.210483	29.152789	857
<i>Trichodes punctatus</i>	1	27/08/2021	38.355182	29.889501	1262
<i>Trichodes punctatus</i>	1	26/08/2021	38.03801	29.330517	1194
<i>Trichodes punctatus</i>	2	06/06/2021	38.549643	31.024834	1259
<i>Trichodes punctatus</i>	1	26/05/2022	38.788116	29.655492	1314
<i>Trichodes punctatus</i>	1	09/07/2021	39.061512	30.758657	1394
<i>Trichodes quadriguttatus</i>	1	04/06/2021	38.927743	31.251767	1591
<i>Trichodes quadriguttatus</i>	1	19/05/2022	38.991756	31.396692	974
<i>Trichodes quadriguttatus</i>	16	19/05/2022	38.945848	31.490641	1017
<i>Trichodes quadriguttatus</i>	1	05/06/2021	39.024003	31.256592	939
<i>Trichodes quadriguttatus</i>	14	04/06/2021	39.15555	31.24517	983
<i>Trichodes quadriguttatus</i>	1	20/05/2022	38.616264	30.848121	987
<i>Trichodes quadriguttatus</i>	3	22/05/2021	38.420015	29.26169	723
<i>Trichodes quadriguttatus</i>	1	05/06/2021	38.790786	31.465674	1181
<i>Trichodes quadriguttatus</i>	2	22/05/2021	38.393592	29.211776	745
<i>Trichodes quadriguttatus</i>	3	15/06/2022	38.292867	30.16584	1063

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Trichodes quadriguttatus</i>	1	29/05/2021	38.951193	29.291199	690
<i>Trichodes quadriguttatus</i>	1	29/05/2021	39.056247	29.083192	1119
<i>Trichodes quadriguttatus</i>	1	26/05/2022	38.676125	29.575	1019
<i>Trichodes quadriguttatus</i>	2	19/06/2019	38.330938	29.525101	918
<i>Trichodes quadriguttatus</i>	11	05/06/2021	38.924545	31.543892	982
<i>Trichodes quadriguttatus</i>	1	05/06/2021	38.825352	31.050036	1141
<i>Trichodes quadriguttatus</i>	10	05/06/2021	38.81107	31.570938	1124
<i>Trichodes quadriguttatus</i>	1	06/06/2022	38.985692	30.117605	1056
<i>Trichodes quadriguttatus</i>	5	18/07/2019	38.506672	29.528059	882
<i>Trichodes quadriguttatus</i>	1	21/05/2022	38.447535	30.116111	1002
<i>Trichodes quadriguttatus</i>	1	18/05/2019	38.07256	30.17835	885
<i>Trichodes quadriguttatus</i>	2	14/06/2022	38.780831	30.470079	1015
<i>Trichodes quadriguttatus</i>	7	17/06/2022	38.906271	31.061401	1208
<i>Trichodes quadriguttatus</i>	3	07/06/2021	38.449555	30.14181	999
<i>Trichodes quadriguttatus</i>	1	04/06/2021	38.978771	31.239397	1027
<i>Trichodes quadriguttatus</i>	4	14/06/2022	38.797376	30.36282	1078
<i>Trichodes quadriguttatus</i>	1	17/05/2019	38.53514	30.69166	1213
<i>Trichodes quadriguttatus</i>	2	14/07/2021	39.105863	30.152603	1027
<i>Trichodes quadriguttatus</i>	2	25/05/2022	38.268163	29.094665	665
<i>Trichodes quadriguttatus</i>	4	22/07/2022	38.18906	29.63352	825
<i>Trichodes quadriguttatus</i>	1	23/05/2022	38.147374	29.555107	851
<i>Trichodes quadriguttatus</i>	1	29/05/2021	39.004317	29.21978	948
<i>Trichodes quadriguttatus</i>	1	29/05/2021	39.008776	29.196058	943
<i>Trichodes quadriguttatus</i>	10	17/06/2022	39.117718	31.184274	986
<i>Trichodes quadriguttatus</i>	1	24/05/2022	38.180117	29.651528	814
<i>Trichodes quadriguttatus</i>	1	15/05/2019	39.200269	31.31742	950
<i>Trichodes quadriguttatus</i>	1	11/06/2021	38.574984	29.441383	860
<i>Trichodes quadriguttatus</i>	1	15/05/2019	39.1425	31.224444	952
<i>Trichodes quadriguttatus</i>	4	22/05/2022	38.052494	30.273887	1012
<i>Trichodes quadriguttatus</i>	1	24/06/2021	39.497615	29.271521	652
<i>Trichodes quadriguttatus</i>	1	27/05/2022	38.300861	29.519727	953
<i>Trichodes quadriguttatus</i>	7	27/05/2022	38.608826	29.545333	992
<i>Trichodes quadriguttatus</i>	1	18/06/2019	38.727532	29.188606	604
<i>Trichodes quadriguttatus</i>	1	21/05/2022	38.468137	29.972174	962
<i>Trichodes quadriguttatus</i>	1	27/05/2022	38.557083	29.614358	811
<i>Trichodes quadriguttatus</i>	1	10/07/2021	38.838529	30.703785	1064
<i>Trichodes quadriguttatus</i>	7	11/07/2021	38.670738	30.757459	998
<i>Trichodes quadriguttatus</i>	1	12/07/2021	37.946796	29.817581	935
<i>Trichodes quadriguttatus</i>	1	12/07/2021	37.846903	30.111686	1190
<i>Trichodes quadriguttatus</i>	1	25/05/2022	38.238155	29.427819	857
<i>Trichodes quadriguttatus</i>	1	21/06/2021	39.204512	30.26748	1101
<i>Trichodes quadriguttatus</i>	1	17/07/2021	39.626635	29.726871	1071

Table 1. Details of collection localities. (Continued).

Species	Specimen Count	Date	Coordinates (°)		Altitude (m)
			Lat. (N)	Long. (E)	
<i>Trichodes suspectus</i>	1	27/05/2022	38.557083	29.614358	811
<i>Trichodes suspectus</i>	1	22/05/2022	38.129264	30.265415	1194

Number of Species by Subfamilies And Genus

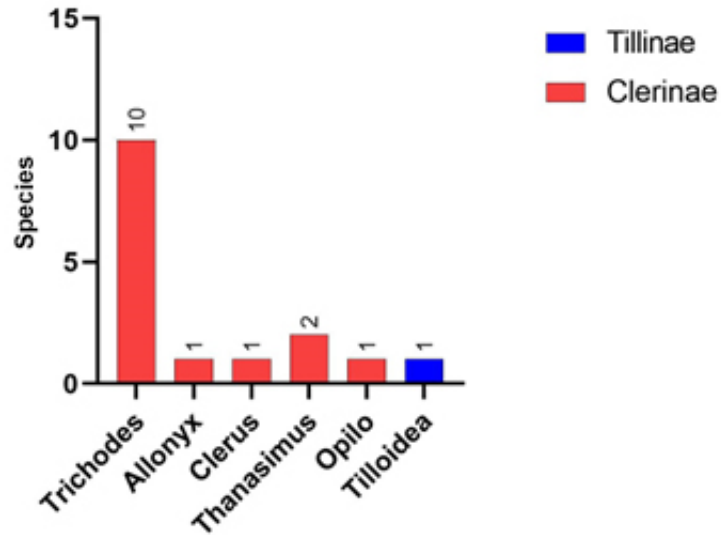


Figure 4. Distribution of species identified from the study area according to subfamilies and genera.

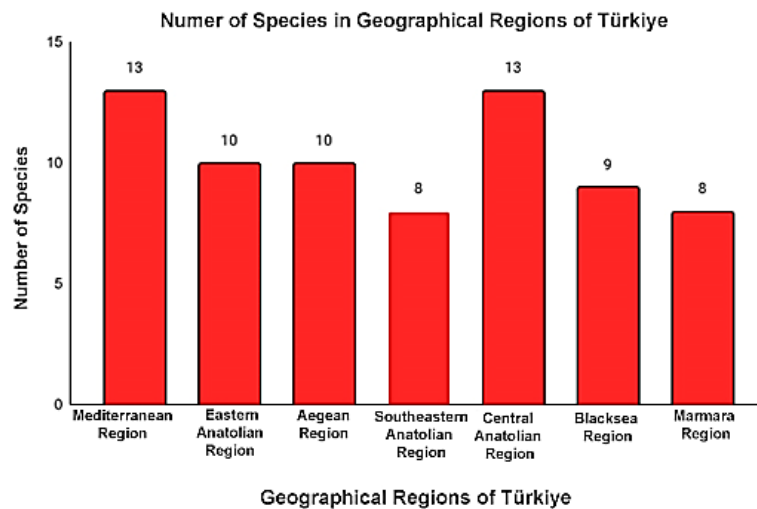


Figure 5. Distribution of the species detected in the study area according to the geographical regions of Türkiye.

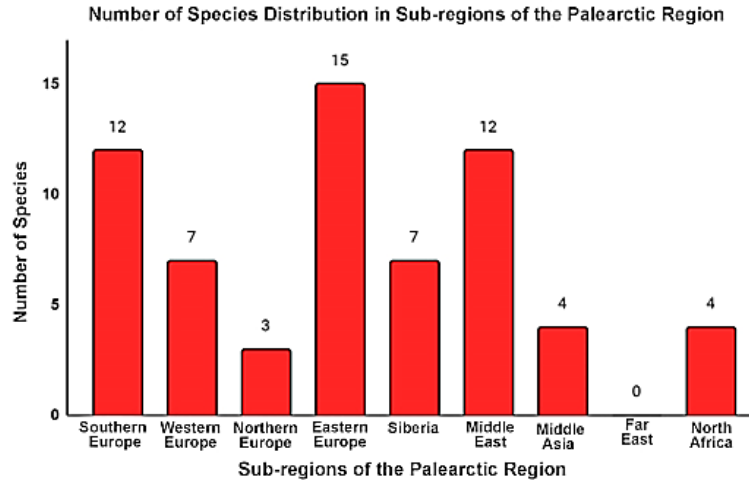


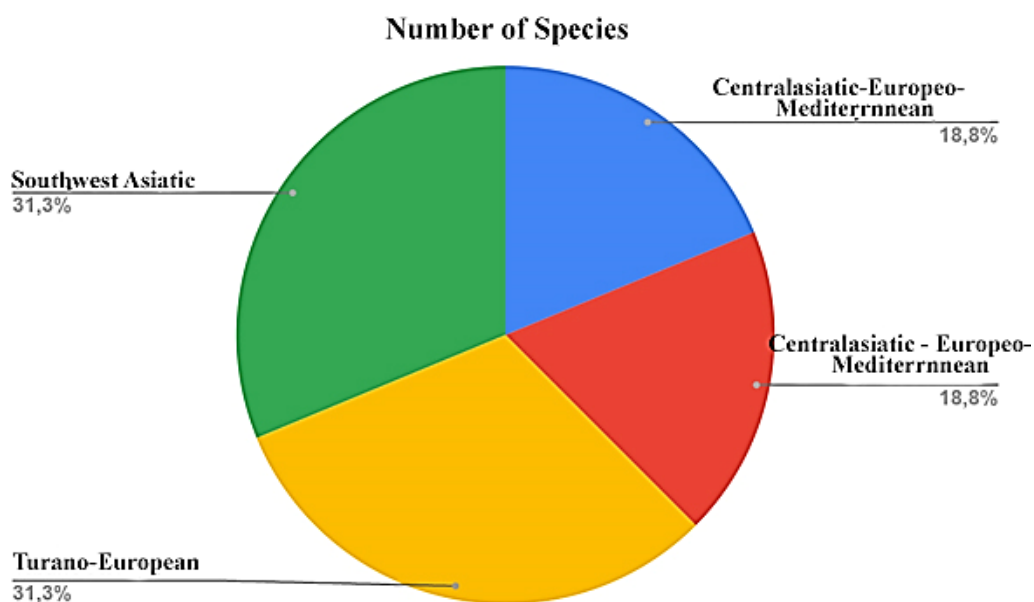
Figure 6. Distribution of the species identified in the study area in the sub-regions of the Palearctic region.

Table 2. Distribution of the identified species according to the geographical regions of Türkiye and sub-regions of the Palearctic region. (1: Mediterranean Region, 2: Eastern Anatolia Region, 3: Aegean Region, 4: Southeastern Anatolia Region, 5: Central Anatolia Region, 6: Black Sea Region, 7: Marmara Region; S.E.: Southern European Region, W.E.: Western European, N.E.: Northern European Region, E.E.: Eastern European, S.: Siberian, M.E.: Middle East Region, C.A.: Central Asia Region, N.A.: North African, CAE: Centralasiatic-European, SWA: Southwest Asiatic, TE: Turano-European, CEM: Centralasiatic-European-Mediterranean).

Identified Species	Türkiye	Subregions of the Palearctic Region	Distribution in the Main Chorotypes
<i>Allonyx quadrimaculatus</i>	3	S.E., W.E., E.E., S., M.E.	CEM
<i>Clerus mutillariodes</i>	1, 2	E.E., M.E.	SWA
<i>Opilo taeniatus</i>	1, 4, 5	S.E., W.E., E.E., S.	CEM
<i>Thanasimus femoralis</i>	3	S.E., W.E., N.A., E.E., S., C.E., N.A.	CAE
<i>Thanasimus formicarius</i>	1, 3, 5, 6, 7	S.E., W.E., N.A., E.E., S., M.E., C.E., N.A.	CAE
<i>Tilloidea transversalis</i>	1, 5, 7	S.E., W.E., E.E., N.A.	CEM
<i>Trichodes alberti</i>	5	E.E., M.E.	SWA
<i>Trichodes apiarius</i>	1, 2, 3, 4, 5, 6, 7	G.A, W.E., N.A., E.E., S., C.E.	CAE
<i>Trichodes crabroniformis</i>	1, 2, 3, 5, 6, 7	S.E., W.E., D.A, M.E.	TE
<i>Trichodes ganglbaueri</i>	1, 2, 4, 5	E.E., M.E.	SWA
<i>Trichodes laminatus</i>	1, 2, 3, 4, 5, 6, 7	S.E., E.E., M.E.	TE
<i>Trichodes longissimus</i>	1, 2, 3, 4, 5, 6, 7	S.E., E.E., M.E., N.A.	SWA
<i>Trichodes nobilis</i>	1, 2, 3, 4, 5, 6, 7	S.E., E.E., S., M.E., C.E.	TE
<i>Trichodes punctatus</i>	1, 2, 3, 5, 6, 7	S.E., E.E., M.E.	TE
<i>Trichodes quadriguttatus</i>	1, 2, 3, 4, 5, 6, 7	S.E., E.E., S., M.E.	TE
<i>Trichodes suspectus</i>	1, 2, 4, 5, 6	M.E.	SWA

Table 3. Number and percentage of species identified by main chorotypes.

Chorotypes	Detected Number of Species	Percent (%)
<i>Centralasiatic-Europeo-Mediterranean</i>	3	18.75
<i>Centralasiatic-European</i>	3	18.75
<i>Turano-European</i>	5	31.25
<i>Southwest Asiatic</i>	5	31.25

**Figure 7.** Ratios of the distribution of the species identified from the study area according to the number of species in the main chorotypes.

No species endemic to Türkiye were identified. Out of the 16 species detected, 15 are shared with the Eastern European fauna, 12 with the Middle Eastern and Southern European faunas, 7 with the Western European and Siberian faunas, 4 with the Central Asian and North African faunas, 3 with the Northern European fauna, and none with the Far Eastern fauna. It was concluded that 93.75% of the species identified from the Central Western Anatolia Section are shared with Eastern Europe, and 75% with the Middle Eastern and Southern European subregions. No species found are distributed across all subregions of the Palearctic, but *Thanasimus formicarius*, absent only in the Siberian subregion, can be considered as having the broadest distribution detected in this study. Species found in at least four subregions include *Allonyx quadrimaculatus*, *Opilo taeniatus*, *Thanasimus femoralis*, *Tilloidea transversalis*, *Trichodes*

apiarius, *Trichodes crabroniformis*, *Trichodes longissimus*, *Trichodes nobilis*, and *Trichodes quadriguttatus*, which can be considered relatively widespread. Species represented in fewer than four subregions include *Clerus mutillariodes*, *Trichodes albei*, *Trichodes ganglbaueri*, *Trichodes laminatus*, *Trichodes punctatus*, and *Trichodes suspectus*, which are considered more narrowly distributed. *Trichodes suspectus* is specifically found only in the Middle East.

When examining the distribution of species detected in the study area according to the geographical regions of Türkiye, 13 species are found in the Mediterranean and Central Anatolia, 10 in the Eastern Anatolia and Aegean, 9 in the Black Sea, and 8 in the Southeastern Anatolia and Marmara regions. The Central Western Anatolia section, lying between the Mediterranean, Aegean, and

Central Anatolia regions, and also in contact with the Eastern Anatolia region, is expected to share a larger number of common species of Cleridae due to these climatic interactions. The fewest common species are shared with the Marmara and Southeastern Anatolia regions. The low level of fauna similarity with the Southeastern Anatolia region is thought to be due to insufficient research related to the family in that area.

Species with the broadest distribution across all of Türkiye's geographical regions include *Trichodes aparius*, *Trichodes laminatus*, *Trichodes longissimus*, *Trichodes nobilis*, and *Trichodes quadriguttatus*. Species confined to a single region include *Allonyx quadrimaculatus*, *Thanasimus femoralis*, and *Trichodes albei*. Upon reviewing the current literature and comparing it with the fauna of the Central Western Anatolia Section, the species that represent new records for the region include *Allonyx quadrimaculatus*, *Clerus mutillariodes*, *Opilo taeniatus*, *Thanasimus femoralis*, *Tilloidea transversalis*, *Trichodes albei*, *Trichodes ganglbaueri*, *Trichodes longissimus*, and *Trichodes suspectus*.

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