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# The Geometrid Moths (Lepidoptera) from the Middle and Eastern Black Sea Regions of Turkey

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**Abstract:** The aim of the present study, which was performed in 2003 and 2005 in Sinop, Kastamonu, Samsun, Amasya, Tokat, Ordu, Giresun, Gümüşhane, and Trabzon provinces, located in the middle and eastern Black Sea regions of Turkey, is to determine the species belonging to Geometridae family. Sweep net and light traps were used to collect the samples. Totally 76 species belonging to 59 genera in 5 subfamilies of the Geometridae family were identified. It is determined in the present study that the following number of species were found to be the first record for the fauna of the provinces from which they were collected: 19 species among 23 in Sinop, 5 species among 6 in Kastamonu, 1 species in Samsun, 4 species among 10 in Amasya, 16 species among 19 in Tokat, 14 species among 18 in Ordu, all of 4 species in Giresun, 6 species among 7 in Gümüşhane, and 34 species among 51 in Trabzon.

**Key Words:** Lepidoptera, Geometridae, fauna, Black Sea region, Turkey

## Türkiye'nin Orta ve Doğu Karadeniz Bölgeleri'nden Geometrid Güveler (Lepidoptera)

**Özet:** Türkiye'nin Orta ve Batı Karadeniz Bölgeleri'nde, Sinop, Kastamonu, Samsun, Amasya, Tokat, Ordu, Giresun, Gümüşhane ve Trabzon illerinde, 2003 ve 2005 yıllarında yapılan bu çalışmada, bu bölgelerde bulunan Geometridae familyası'na ait türlerin tespit edilmesi amaçlanmıştır. Örnekleri toplamak için atrap ve ışık tuzağı kullanılmıştır. Geometridae familyasından 5 alt familyaya dahil 59 cins'e ait toplam 76 tür belirlenmiştir. Çalışma ile Sinop'ta belirlenen 23 türün 19'u, Kastamonu'da belirlenen 6 türün 5'i, Samsun'da belirlenen 1 tür, Amasya'da belirlenen 10 türün 4'ü, Tokat'ta belirlenen 19 türün 16'si, Ordu'da belirlenen 18 türün 14'ü, Giresun'da belirlenen 4 türün tamamı, Gümüşhane'de belirlenen 7 türün 6'sı ve Trabzon'da belirlenen 51 türün 34 tanesi bu illerin faunası için yeni kayıt olarak belirlenmiştir.

**Anahtar Sözcükler:** Lepidoptera, Geometridae, fauna, Karadeniz Bölgesi, Türkiye

## Introduction

Turkey is located between Asia and Europe and has very distinct geographical regions. In these regions, there are high mountains, planes, and plateaus with various climatic conditions. Plant geography describes 37 floral regions in the world. Turkey has 3 regions. When the total area of Turkey is considered, 3 floral regions indicate richness in diversity. This richness of flora is important to evaluate the animal diversity of Turkey as the plants are the first entity of the animal food chain. Turkey's topography and different ecological conditions directly influence the plant and animal species diversity, which has not been fully brought to light. Geometridae,

one of the largest families in Lepidoptera, was investigated in a limited numbers of studies conducted. The studies on the geometrid fauna of Turkey started in mid-19<sup>th</sup> century. Mathew (1881), Wehrli (1934), Zukowsky (1941), De Lattin (1951), Kansu (1963), and Mol (1973) could be given as important studies on Lepidoptera fauna of different regions of Turkey. Riemis (1994, 1996, 1998) listed geometrid moths of Turkey in different studies. Seven (1991) listed 595 Lepidoptera species with their proposed scientific names and 1355 citations regarding the collecting sites. One hundred and ten species belonging to the family Geometridae were found among them. In recent studies by Okyar and Aktaş

(1999), Doğanlar (2003), and Özdemir (2007) Geometridae fauna was investigated in different parts of Turkey, namely Thrace, the east Mediterranean region, and Bolu and Düzce provinces, respectively. Koçak and Seven (2001) prepared a tentative checklist dealing with the Lepidoptera species recorded in Turkey. Koçak and Kemal (2006) explained synonyms, Turkish vernacular names, and provincial distributions of 5029 species belonging to 76 Lepidoptera families in Turkey. Additionally, 5101 species and 1454 subspecies of Lepidoptera in Turkey were enumerated and listed alphabetically under the related families in a study by Koçak and Kemal (2007). Besides, larval food plants were added to the 1648 species.

The objective of our study was to determine geometrid species of the middle and eastern Black Sea regions, which have very different climatic, geographical, and faunistic features compared to other regions of Turkey.

Study Area: Turkey, divided into 7 regions including Black Sea region based on climatic parameters, has a total of 779,452 km<sup>2</sup> land area with an average altitude of 1250 m. The Black Sea region has a steep, rocky coast with rivers that cascade through the gorges of the coastal ranges. The southern slopes are mostly unwooded, but the northern slopes contain dense deciduous and evergreen trees. A few large rivers, those cutting back through the east Black Sea mountain ranges, have tributaries flowing in broad, elevated basins. Access to the inland from the coast is limited to a few narrow valleys because mountain ridges form, with elevations of 1525 to 1800 m in the west and 3000 to 4000 m in the east in Kaçkar Mountains, an almost unbroken wall separating the coast from the interior. The higher slopes facing northwest tend to be densely forested. Because of these natural conditions, the Black Sea coast has been isolated from Anatolia. Due to rainy and temperate climate, dominant plant cover in the Black Sea region is forest. Beech (*Fagus* spp.), oak (*Quercus* spp.), hornbeam (*Carpinus* spp.), black pine (*Pinus* spp.), and fir (*Abies* spp.) are seen at the upper elevations from 600-700 m altitudes of sea level in the Black Sea region. In the east Black Sea region, spruce trees (*Picea* spp.), which can survive at the upper elevations, take the place of fir trees. Besides, hazelnut

shrubs have very wide common area in the region. At lower altitudes, trees and shrubs such as blackberry (*Rubus fruticosus*), privet (*Ligustrum* sp.), firebush (*Hamelia patens*), roses (*Rosa* spp.), Italian honeysuckle (*Lonicera caprifolium*), European box or common box (*Buxus sempervirens*), and wild strawberry (*Fragaria vesca*) occur instead of forest trees.

## Materials and Methods

Selection of different localities and habitat types from the middle and eastern Black Sea region in order to obtain different geometrid species was prompted in the present study. Adults were mainly collected at night, mostly using a small generator with different types of lamps (usually 160 W lamps), or by sweeping the vegetation at dusk and daylight. The samples collected from these regions are in the collection of Feza Can, but duplicates are stored in the Department of Plant Protection, Faculty of Agriculture, Mustafa Kemal University, in Hatay, Turkey. Faunistic data of all the species collected in the present study are given (Table and Figure).

All specimens were dissected in the laboratory. Male and female genitalia of all species were prepared as genital slides. The genitalia preparations were made partly in Entellan and partly in Euperal, following conventional procedures. External and genital taxonomic characteristics of all 459 specimens were examined by a stereo microscope. The identification and confirmation of the species were achieved by the author by comparing the material with identified specimens of the Zoologische Staatssammlung München, Munich, and Collection of Joerg Gelbrecht, Königs Wusterhausen, Germany, between July and September, 2007.

## Results

All taxa were identified by following the checklist The Lepidoptera of Europe by Karsholt and Razowski (1996). Since *Heterolocha laminaria* (Herrich-Schäffer, 1852) and *Trichodezia haberhaueri* (Lederer, 1864) could not be found in the checklist, these species were added to the end of their related subfamilies lists.

Table. Collection sites and coordinates and altitudes of the sampling locations of geometrid species (Lepidoptera: Geometridae) from different regions of Turkey (studied in 2003 and 2005).

No.	Collection sites	Coordinates (°; ' ; ")	Altitudes (m)
1	Kastamonu-Çiçekkaya	41 46 27 N; 34 03 24 E	1270
2	Kastamonu-Çağlar	41 52 30 N; 34 07 15 E	1020
3	Kastamonu-Çatalzeytin	44 54 32 N; 34 09 50 E	635
4	Sinop-Yenikonak	41 47 10 N; 34 37 42 E	623
5	Sinop-Erfelek	41 53 16 N; 34 49 31 E	505
6	Sinop-Sinoren	41 48 40 N; 35 01 50 E	380
7	Sinop-Dranaz geçidi	41 35 22 N; 34 50 11 E	1350
8	Samsun-Küpecik	40 52 51 N; 36 04 37 E	964
9	Amasya-Borabey	40 48 12 N; 36 08 52 E	1066
10	Ordu-Akkuş (Çaldere)	40 51 08 N; 36 59 04 E	1270
11	Ordu-Akkuş (Esentepe)	40 54 58 N; 37 05 33 E	942
12	Ordu-Tekkiraz	41 01 09 N; 37 12 06 E	404
13	Ordu-Fatsa	41 01 10 N; 37 41 54 E	693
14	Trabzon-Maçka (Başarköy)	40 42 45 N; 39 27 21 E	1470
15	Trabzon- Maçka	40 45 21 N; 39 37 13 E	427
16	Trabzon- Maçka (Çamlıdüz)	40 42 15 N; 39 29 48 E	1004
17	Trabzon- Maçka (Ormanüstü)	40 45 17 N; 39 28 35 E	1516
18	Trabzon-Maçka (Uzungöl)	40 35 03 N; 40 17 37 E	2000
19	Trabzon-Çayeli	40 46 10 N; 40 15 45 E	340
20	Gümüşhane-Yeniyol	40 23 58 N; 39 28 51 E	1309
21	Gümüşhane-Kırçova	40 21 44 N; 39 43 20 E	1859
22	Giresun-Şebinkarahisar	40 20 25N; 38 26 41 E	1278
23	Tokat-Kızılıniş	40 14 24 N; 36 34 52 E	905
24	Tokat-Niksar	40 26 08 N; 37 06 40 E	416
25	Tokat-Geyraz	40 41 23 N; 36 48 12 E	623

Family Geometridae Leach, (1815)

Subfamily Ennominae

*Abraxas sylvata* (Scopoli, 1763)

Material: 28.VI.2005, 15: 3♀♀; 30.VI.2005, 17: 2♂♂.

*Lomaspilis bithynica* Wehrli, 1954

Material: 13.VI.2003, 4: 3♀♀; 16.VI.2003, 14:1♂; 19.VI.2003, 23: 2♂♂; 29.VI.2005, 16; 9♂♂, 6♀♀; 30.VI.2005, 17: 2♀♀.

*Ligdia adustata* (Denis & Schiffermüller, 1775)

Material: 28.VI.2005, 15: 2♀♀; 29.VI.2005, 16: 2♂♂; 30.VI.2005, 17: 1♂.

*Stegania dilectaria* (Hübner, 1790)

Material: 19.VI.2003, 23: 1♂.

*Heliomata glarearia* (Denis & Schiffermüller, 1775)

Material: 13.VI.2003, 3: 2♀♀; 17.VI.2003, 20: 3♂♂; 19.VI.2003, 23: 1♂.

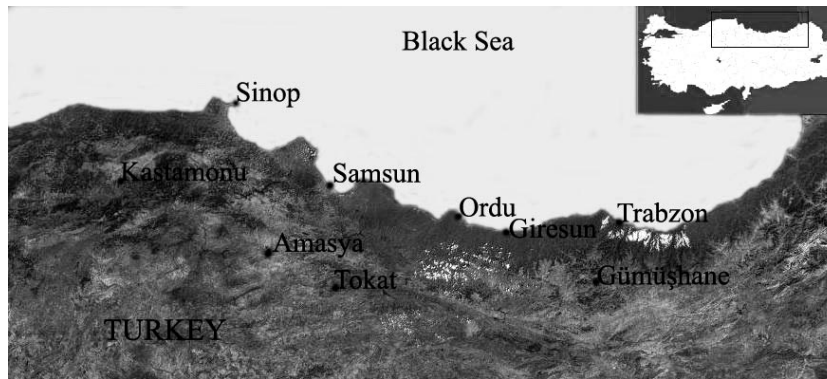


Figure. Research area of geometrid moth species (Lepidoptera: Geometridae) in 2003 and 2005 (Google Earth, 2007: <http://maps.google.com/>).

*Macaria notata* (Linnaeus, 1758)

Material: 13.VI.2003, 4: 1♂.

*Macaria artesiaria* (Denis & Schiffermüller, 1775)

Material: 19.VI.2003, 23: 1♂.

*Neognopharmia stevenaria* (Boisduval, 1840)

Material: 16.VI.2003, 14: 1♂.

*Cepphis advenaria* (Hübner, 1790)

Material: 16.VI.2003, 13: 2♂♂.

*Petrophora chlorosata* (Scopoli, 1763)

Material: 13.VI.2003, 4: 1♂; 15.VI.2003, 11: 1♂; 16.VI.2003, 14: 1♀.

*Plagodis dolabraria* (Linnaeus, 1767)

Material: 13.VI.2003, 4: 2♂♂.

*Opisthograptis luteolata* (Linnaeus, 1758)

Material: 13.VI.2003, 4: 2♂♂; 14.VI.2003, 9: 1♂, 1♀; 15.VI.2003, 10: 3♂♂; 11: 1♀; 16.VI.2003, 14: 2♂♂; 28.VI.2005, 15: 1♀; 29.VI.2005, 16: 2♀♀; 30.VI.2005, 17: 7♂♂, 2♀♀.

*Therapis flavicaria* (Denis & Schiffermüller, 1775)

Material: 28.VI.2005, 15: 4♂♂; 29.VI.2005, 16: 2♂♂.

*Pseudopanthera macularia* (Linnaeus, 1758)

Material: 13.VI.2003, 1: 2♂♂; 16.VI.2003, 14: 1♀; 17.VI.2003, 18: 2♂♂; 19.VI.2003, 23: 1♂.

*Eilicrinia cordiaria* (Hübner, 1790)

Material: 16.VI.2003, 14: 1♀.

*Apeira syringaria* (Linnaeus, 1758)

Material: 13.VI.2003, 4: 1♂.

*Selenia lunularia* (Hübner, 1788)

Material: 13.VI.2003, 4: 1♂; 16.VI.2003, 14: 5♂♂; 28.VI.2005, 15: 2♂♂; 29.VI.2005, 16: 2♂♂, 2♀♀; 30.VI.2005, 17: 1♀.

*Ourapteryx* sp.

Material: 29.VI.2005, 16: 1♂; 30.VI.2005, 17: 1♂.

*Biston betularius* (Linnaeus, 1758)

Material: 13.VI.2003, 4: 1♂; 16.VI.2003, 14: 1♂; 29.VI.2005, 16: 2♂♂; 30.VI.2005, 17: 1♂.

*Peribatodes rhomboidaria* (Denis & Schiffermüller, 1775)

Material: 13.VI.2003, 4: 3♂♂; 14.VI.2003, 9: 2♀♀; 16.VI.2003, 13: 1♀; 19.VI.2003, 23: 7♂♂; 29.VI.2005, 16: 3♂♂, 2♀♀.

*Hypomecis punctinalis* (Scopoli, 1763)

Material: 14.VI.2003, 6: 1♂; 9: 1♂, 1♀; 16.VI.2003, 13: 2♂♂; 14: 2♀♀.

*Ascotis selenaria* (Denis & Schiffermüller, 1775)

Material: 13.VI.2003, 4: 1♀; 16.VI.2003, 13: 1♂; 28.VI.2005, 15: 1♂.

*Ematurga atomaria* (Linnaeus, 1758)

Material: 13.VI.2003, 2: 5♂♂, 2♀♀; 3: 1♂; 4: 2♂♂; 14.VI.2003, 5: 3♂♂, 2♀♀; 7: 2♂♂; 8: 2♂♂; 19.VI.2003, 23: 3♂♂.

*Cabera pusaria* (Linnaeus, 1758)

Material: 15.VI.2003, 10: 2♂♂; 11: 3♂♂, 1♀; 16.VI.2003, 14: 9♂♂, 2♀♀; 17.VI.2003, 18: 2♂♂; 19: 2♂♂; 19.VI.2003, 23: 2♂♂, 1♀; 29.VI.2005, 16: 1♂; 30.VI.2005, 17: 6♂♂.

*Lomographa temerata* (Denis & Schiffermüller, 1775)

Material: 19.VI.2003, 23: 2♂♂.

*Campaea margaritata* (Linnaeus, 1767)

Material: 13.VI.2003, 4: 2♀♀; 14.VI.2003, 9: 1♂, 1♀; 28.VI.2005, 15: 1♂.

*Siona lineata* (Scopoli, 1763)

Material: 19.VI.2003, 23: 1♂.

*Heterolocha laminaria* (Herrich-Schäffer, 1852)

Material: 16.VI.2003, 14: 12♂♂, 2♀♀; 28.VI.2005, 15: 1♂; 30.VI.2005, 17: 2♂♂, 2♀♀.

## Subfamily Orthostixinae

*Orthostixis calcularia* Lederer, 1853

Material: 17.VI.2003, 20: 4♀♀.

## Subfamily Geometrinae

*Pseudoterpna pruinata* (Hufnagel, 1767)

Material: 13.VI.2003, 4: 1♂, 1♀.

*Comibaena bajularia* (Denis & Schiffermüller, 1775)

Material: 13.VI.2003, 4: 7♂♂, 4♀♀; 19.VI.2003, 23: 13♂♂; 28.VI.2005, 15: 1♂, 1♀.

*Hemithea aestivaria* (Hübner, 1799)

Material: 29.VI.2005, 16: 1♂.

*Chlorissa viridata* (Linnaeus, 1758)

Material: 13.VI.2003, 4: 3♂♂.

*Phaiogramma etruscaria* (Zeller, 1849)

Material: 16.VI.2003, 14: 1♀; 18.VI.2003, 22: 1♂.

*Hemistola chrysoprasaria* (Esper, 1794)

Material: 19.VI.2003, 23: 1♂, 1♀.

*Jodis lactearia* (Linnaeus, 1758)

Material: 13.VI.2003, 3: 1♂; 15.VI.2003, 11: 1♂; 16.VI.2003, 14: 10♂♂; 29.VI.2005, 16: 2♂♂; 30.VI.2005, 17: 2♂♂.

## Subfamily Sterrhinae

*Cyclophora annularia* (Fabricius, 1775)

Material: 16.VI.2003, 14: 2♀♀; 17.VI.2003, 19: 1♀; 28.VI.2005, 15: 4♂♂, 2♀♀.

*Cyclophora punctaria* (Linnaeus, 1758)

Material: 19.VI.2003, 23: 2♂♂.

*Cyclophora linearia* (Hübner, 1799)

Material: 15.VI.2003, 11: 1♂; 16.VI.2003, 13: 2♂♂; 30.VI.2005, 17: 2♂♂, 1♀.

*Scopula ornata* (Scopoli, 1763)

Material: 15.VI.2003, 11: 1♂; 17.VI.2003, 20: 2♂♂; 28.VI.2005, 15: 2♂♂, 2♀♀.

*Scopula orientalis* (Alpheraky, 1876)

Material: 17.VI.2003, 20: 1♂.

*Scopula decorata* (Denis & Schiffermüller, 1775)

Material: 18.VI.2003, 24: 2♀♀; 28.VI.2005, 15: 1♀.

*Scopula incanata* (Linnaeus, 1758)

Material: 16.VI.2003, 14: 1♂.

*Scopula marginepunctata* (Goeze, 1781)

Material: 14.VI.2003, 9: 1♂, 4♀♀; 16.VI.2003, 14: 3♀♀; 23: 1♂.

*Scopula imitaria* (Hübner, 1799)

Material: 13.VI.2003, 4: 1♂.

*Idaea filicata* (Hübner, 1799)

Material: 14.VI.2003, 9: 2♀♀; 19.VI.2003, 23: 2♀♀.

*Idaea moniliata* (Denis & Schiffermüller, 1775)

Material: 18.VI.2003, 24: 1♂.

*Idaea trigeminata* (Haworth, 1809)

Material: 28.VI.2005, 15: 1♀; 29.VI.2005, 16: 1♂.

*Idaea ostrinaria* (Hübner, 1813)

Material: 19.VI.2003, 23: 1♀.

*Idaea degeneraria* (Hübner, 1799)

Material: 16.VI.2003, 13: 1♀; 28.VI.2005, 15: 4♀♀.

*Idaea maritimaria* (Bruand, 1846)

Material: 28.VI.2005, 15: 2♀♀.

*Rhodostrophia vibicaria* (Clerck, 1759)

Material: 13.VI.2003, 4: 2♀♀; 14.VI.2003, 9: 1♂; 29.VI.2005, 16: 2♂♂.

*Rhodostrophia auctata* (Staudinger, 1879)

Material: 15.VI.2003, 11: 1♂, 1♀; 16.VI.2003, 14: 4♂♂, 1♀; 19.VI.2003, 6: 1♀.

*Rhodostrophia calabra* (Petagna, 1786)

Material: 13.VI.2003, 4: 2♂♂; 28.VI.2005, 15: 7♂♂, 6♀♀.

*Rhodostrophia discopunctata* Amsel, 1935

Material: 17.VI.2003, 20: 1♂; 18.VI.2003, 22: 2♂♂; 24: 3♂♂, 1♀.

Subfamily Larentiinae

*Lythria purpuraria* (Linnaeus, 1758)

Material: 15.VI.2003, 10: 1♂; 11: 1♂; 16.VI.2003, 14: 1♂; 23: 1♂.

*Scotopteryx luridata* (Hufnagel, 1767)

Material: 13.VI.2003, 4: 1♂; 28.VI.2005, 15: 2♂♂, 2♀♀; 30.VI.2005, 17: 2♂♂, 2♀♀.

*Xanthorhoe designata* (Hufnagel, 1767)

Material: 16.VI.2003, 14: 3♂♂, 2♀♀.

*Xanthorhoe montanata* (Denis & Schiffermüller, 1775)

Material: 30.VI.2005, 17: 1♂, 1♀.

*Epirrhoe rivata* (Hübner, 1813)

Material: 16.VI.2003, 14: 1♂.

*Camptogramma bilineata* (Linnaeus, 1758)

Material: 14.VI.2003, 5: 1♂, 1♀; 15.VI.2003, 11: 1♂; 18.VI.2003, 22: 2♂♂; 24: 2♂♂, 1♀.

*Lampropteryx suffumata* (Denis & Schiffermüller, 1775)

Material: 16.VI.2003, 14: 1♂.

*Cosmorhoe ocellata* (Linnaeus, 1758)

Material: 14.VI.2003, 9: 1♀; 28.VI.2005, 15: 1♂, 1♀.

*Ecliptopera silaceata* (Denis & Schiffermüller, 1775)

Material: 29.VI.2005, 16: 2♂♂, 3♀♀; 30.VI.2005, 17: 2♀♀.

*Cidaria fulvata* (Forster, 1771)

Material: 29.VI.2005, 16: 2♀♀.

*Thera obeliscata* (Hübner, 1787)

Material: 14.VI.2003, 9: 2♂♂, 1♀.

*Colostygia pectinataria* (Knoch, 1781)

Material: 16.VI.2003, 14: 2♂♂, 1♀; 30.VI.2005, 17: 1♂.

*Hydriomena impluviata* (Denis & Schiffermüller, 1775)

Material: 15.VI.2003, 11: 1♀; 16.VI.2003, 14: 3♂♂, 2♀♀; 30.VI.2005, 17: 5♂♂.

*Melanthia procellata* (Denis & Schiffermüller, 1775)

Material: 13.VI.2003, 4: 1♂, 1♀; 29.VI.2005, 16: 2♂♂.

*Rheumaptera hastata* (Linnaeus, 1758)

Material: 24.VI.2005, 11: 1♀.

*Triphosa sabaudiata* (Duponchel, 1830)

Material: 14.VI.2003, 9: 1♀.

*Perizoma alchemillata* (Linnaeus, 1758)

Material: 17. VI.2003, 18: 8♂♂.

*Eupithecia schiefereri* (Bohatsch, 1893)

Material: 29.VI.2005, 16: 1♀; 30.VI.2005, 17: 1♀.

*Aplocera plagiata* (Linnaeus, 1758)

Material: 16.VI.2003, 1: 1♂1♀; 17. VI.2003, 21: 3♂♂; 19.VI.2003, 23: 1♂; 30.VI.2005, 17: 1♀.

*Odezia atrata* (Linnaeus, 1758)

Material: 13.VI.2003, 3: 1♂; 16.VI.2003, 14: 2♂♂; 17. VI.2003, 20: 1♂, 1♀; 18.VI.2003, 22: 6♂♂.

*Trichodezia haberhaueri* (Lederer, 1864)

Material: 15.VI.2003, 10: 2♂♂; 11: 2♀♀; 16.VI.2003, 14: 2♂♂.

## Discussion

Geometridae is one of the largest families in Lepidoptera. Significant numbers of systematic and faunistic studies and biological diversity analyses were performed on Geometridae family (Gaston et al., 1995). The studies on determination of Geometridae species and their distribution areas revealed the great importance of Turkey. For example, Can and Mironov (2006) attempted to determine the diversity of Geometrid species in the Black Sea region of Turkey and reported a new species, *Perizoma onurcani* (Can and Mironov, 2006). The record of this new species shows that poorly investigated places like the Black Sea region are promising for recording interesting or new species.

In the present study, the identification results of geometrid moth samples collected at 25 different localities of the middle and eastern Black Sea regions were presented. In all, 59 species belonging to 76 genera of 5 subfamilies were identified: 27 genera and 28 species belonged to Ennominae, 1 genus and 1 species belonged to Orthostixinae, 7 genera and 7 species belonged to Geometrinae, 4 genera and 19 species belonged to Sterrhinae, and 20 genera and 21 species belonged to Larentiinae.

Koçak and Kemal (2007) reported 254 geometrid species occurring in these regions and listed the provinces in which they were found. With this study, it is determined that the following number of species were found to be the first record for the fauna of the provinces from which they were collected: 19 species among 23 in Sinop, 5 species among 6 in Kastamonu, 1 species in Samsun, 4 species among 10 in Amasya, 16 species among 19 in Tokat, 14 species among 18 in Ordu, all of 4 species in Giresun, 6 species among 7 in Gümüşhane, and 34 species among 51 in Trabzon.

*Lomaspilis bithynica* Wehrli 1954, formerly treated as a subspecies of *L. opis* (Butler, 1878), was recognized as a distinct species new for Europe by Gelbrecht et al. (2004). In this study, samples of *L. bithynica* were collected from Tokat, Sinop, and Trabzon, where large numbers of *Populus tremula* (which is the host plant of *L. bithynica*, Gelbrecht et al., 2004) were observed. *Opisthograptis luteolata* (Linnaeus, 1758), which was found at 9 localities in our study, is the most common species in these regions.

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- This is the first report that demonstrates the presence of *Cyclophora linearia* (Hübner, 1799) in the east Black Sea region which was thought to exist in the mountainous regions of Turkey (Hausmann, 2004). *Scopula marginepunctata* (Goeze, 1781), found at 3 localities in this study, is very common species in Turkey and Europe.
- Although *Lampropteryx suffumata* (Denis & Schiffermüller, 1775) was reported recently by Koçak and Kemal (2007) from Bolu, there was not any detail of the collecting time of this species, nor of the study. In the current study, that species was collected from Trabzon, which is fairly east compared to the findings of Koçak and Kemal (2007).
- In conclusion, the current study was directed to contribute to the knowledge on the fauna of the Geometridae family in the middle and eastern Black Sea regions of Turkey. As a result of our study, 76 species belonging to 59 genera of 5 subfamilies were identified: Ennominae, Orthostixinae, Geometrinae, Sterrhinae, and Larentiinae.

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