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A cow dung investigation on Histeridae (Coleoptera) with a new recor for Turkey

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In this study, 12 Histeridae species were recorded from cow dung located in western Turkey. Amongst them, *Atholus scutellaris* Erichson, 1834 is the first record for Turkish fauna. In addition, the number of known species / subspecies of Histeridae belonging to Turkish fauna is rised up to 121. Also ecological data based on 138 specimens of Histeridae collected in cow dung located in 2004 and 2006 were evaluated.

Key words: Coleoptera, Histeridae, *Atholus scutellaris*, new record, cow dung, Turkey.

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INTRODUCTION

The family Histeridae contains about 330 genera and 3900 species (Mazur, 1997). Most Histerid beetles are generalist predators, generalist in the sense that most can survive on whatever soft-bodied prey, usually larval Diptera, they encounter in their chosen habitat. In habitat preference, however, Histerids vary widely. The most widely recognized habitats for Histerids are dung and carrion. However, although prominent, these habits account for a relatively small fraction of Histerid diversity. Various Histerids are also associated with fungi (some apparently are even primarily fungus-feeding). Many are associated with trees, either living primarily under bark, in tree holes, or in the galleries of wood-boring beetles. Some species prefer leaf litter or other decomposing vegetation, especially fruit. Finally, a large number of Histerids live in symbiotic associations with other animals. Many species are restricted to specific burrows, including those of both rodents and tortoises. Some species are found mainly in birds' nests.

Faunistic studies on the Histerid beetles of Turkey have been conducted by Heyden at al., (1906), Sahlberg (1912-1913), Gadeau de Kerville (1939), Byzinski-Salz (1956), Tuatay et al. (1972), Mazur (1981), Kanaar (1992), Lackner (2004),

Lackner & Hlavač (2002) and Tezcan & Yélamos (2004).

In this study the Histeridae fauna of cow dung at two locations of western Turkey has been evaluated.

MATERIAL AND METHODS

Histerid beetles were collected from the beginning of April to the mid of November with two week intervals by paddle from cow dung in two different areas (ca. 3 ha each) located at 600 m and 900 m above sea level in Dagmarmara, Manisa province, Western Turkey in 2004 and 2006. In each locality, dung was put into 120 ml plastic jars. The weight of dung put into each jar was approximately 50 gr. At each interval, a total of 15 samples were taken at each locality and insect were seperated from dung at laboratory conditions.

The material referred to in this study is deposited in LEMT (Lodos Entomological Museum, Department of Plant Protection, Aegean University, Izmir, Turkey). The subfamilies were listed according to the catalogue of Mazur (1997) and species within each subfamily were listed in alphabetic order.

RESULTS

In this study, 12 species belonging to the family Histeridae were recorded from dung samples. Amongst them, ***Atholus scutellaris*** Erichson, 1834 is the first record for Turkish fauna. Also ecological data based on 138 specimens of Histeridae collected in cow dung located in 2004 and 2006 were evaluated.

Histerinae Gyllenhal, 1808

Atholus bimaculatus (Linnaeus, 1758)

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 1 ex., 10.VIII.2004 det. Anlaş; 2 ex., 25.IX.2004 det. Anlaş; 2 ex., 30.VI.2006 det. Anlaş; **900 m**; 1 ex., 15.IV.2004 det. Anlaş; 1 ex., 11.VI.2004 det. Lackner, 2 ex., same data but det. Anlaş. Totally 9 specimens.

Distribution in the world: Europe, North Africa, Afghanistan, Cyprus, Russia, Iran, Iraq, Israel, Japan, Jordan, Turkey, Afrotropical, Nearctic, Neotropical and Oriental Regions (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Austria, Balearic Islands, Belarus, Belgium, Bosnia-Herzegovina, Britain Islands, Bulgaria, Canary Islands, Corsica, Crete, Croatia, Cyclades Islands, Cyprus, Czech Republic, Danish Mainland, Dodecanese Islands, Estonia, European Turkey, French Mainland, Germany, Gibraltar, Greek Mainland, Hungary, Ireland, Italian Mainland, Kaliningrad region, Latvia, Lithuania, Luxemburg, Macedonia, Madeira, Malta, Moldova, North Aegean Islands, Norwegian Mainland, Poland, Portuguese Mainland, Romania, Russia Central, Northwest and South, Sardinia, Sicily, Slovakia, Slovenia, Spanish Mainland, Sweden, Switzerland, The Netherlands, Ukraine, Yugoslavia (=Serbia & Montenegro)].

Atholus scutellaris (Erichson, 1834)

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 1 ex., 25.IX.2004 det. Lackner; 1 ex., same data but det. Anlaş. Totally 2 specimens.

Distribution in the world: Armenia, Croatia, Greece, Italy, Egypt, Cyprus, Israel, Kazakhstan, Saudi Arabia, Syria, Tajikistan, Turkmenistan, Uzbekistan and Afrotropical Region (Mazur, 2004). This is the first record for Turkish fauna.

Hister illigeri Duftschmid, 1805

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 3 ex., 30.IV.2004 det. Anlaş; 2 ex., 14.V.2006 det. Anlaş; 2 ex., 28.V.2006 det. Anlaş; 1 ex., 30.IX.2006 det. Anlaş; **900 m**, 6 ex., 15.IV.2004 det. Anlaş; 2 ex., 30.IV.2004 det. Lackner,

14 ex., same data but det. Anlaş; 4 ex., 10.V.2004 det. Anlaş; 3 ex., 11.VI.2004 det. Lackner, 4 ex., same data but det. Anlaş; 3 ex., 10.VII.2004 det. Anlaş; 9 ex., 25.VIII.2004 det. Anlaş; 2 ex., 24.X.2004 det. Anlaş; 2 ex., 07.XI.2004 det. Lackner, 3 ex., same data but det. Anlaş; 8 ex., 15.IV.2006 det. Anlaş; 3 ex., 30.IV.2006 det. Anlaş; 1 ex., 14.V.2006 det. Anlaş; 3 ex., 28.V.2006 det. Anlaş; 1 ex., 14.VI.2006 det. Anlaş; 2 ex., 30.VI.2006 det. Anlaş; 3 ex., 16.VII.2006 det. Anlaş; 1 ex., 15.VIII.2006 det. Anlaş; 5 ex., 15.IX.2006 det. Anlaş; 7 ex., 30.IX.2006 det. Anlaş; 5 ex., 15.X.2006 det. Anlaş; 3 ex., 29.X.2006 det. Anlaş. Totally 102 specimens.

Distribution in the world: Europe, Afghanistan, Turkey, Iran, Kyrgzstan (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Austria, Belarus, Bosnia-Herzegovina, Bulgaria, Corsica, Crete, Croatia, Czech Republic, Estonia, European Turkey, French Mainland, Germany, Greek Mainland, Hungary, Italian Mainland, Macedonia, Poland, Romania, Russia Central, Northwest & South, Sardinia, Sicily, Slovakia, Slovenia, Spanish Mainland, Switzerland, Ukraine, Yugoslavia (=Serbia & Montenegro)].

Hister quadrimaculatus Linnaeus, 1758

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 1 ex., 15.IV.2004 det. Anlaş; 1 ex., 30.IV.2004 det. Anlaş; 2 ex., 14.V.2006 det. Anlaş; **900 m**; 1 ex., 28.V.2006 det. Anlaş. Totally 5 specimens.

Distribution in the world: Europe, Turkey, Cyprus, Iran, Kyrgzstan, Kazakhistan, Tajikistan (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Andorra, Austria, Belarus, Belgium, Bosnia-Hercegovina, Britain Island, Bulgaria, Corsica, Crete, Croatia, Czech Republic, Estonia, European Turkey, French Mainland, Germany, Greek Mainland, Hungary, Italian Mainland, Luxemburg, Macedonia, Poland, Portuguese Mainland, Romania, Russia Central, Northwwest and South, Sardinia, Sicily, Slovakia, Slovenia, Spanish Mainland, Switzerland, Ukraine, Yugoslavia (=Serbia & Montenegro)].

Hister sepulchlralis Erichson, 1834

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**, 1 ex., 15.IV.2004 det. Anlaş; **900 m**, 1 ex., 30.IV.2004 det. Anlaş; 1 ex., 10.X.2004 det. Lackner; 1 ex., 15.IV.2006 det. Anlaş. Totally 4 specimens.

Distribution in the world: Europe, Iran, Jordan, Lebanon, Turkey (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Austria, Bosnia & Herzegovina, Bulgaria, Croatia, European Turkey, Greek Mainland, Hungary, Moldova, Poland, Romania, Russia Northwest & South, Slovakia, Slovenia, Ukraine, Yugoslavia (=Serbia & Montenegro).

Margarinotus carbonarius (Hoffmann, 1803)

Material examined: Manisa, Turgutlu, Dagmarmara **900 m**; 1 ex., 15.IV.2004 det. Lackner. Totally 1 specimen.

Distribution in the world: Europe, Israel, Turkey, Russia: West Siberia (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Andorra, Austria, Belarus, Belgium, Bosnia-Herzegovina, Britain Islands, Bulgaria, Crete, Croatia, Cyprus, Czech Republic, Danish Mainland, Estonia, European Turkey, French Mainland, Germany, Greek Mainland, Hungary, Ireland, Italian Mainland, Kaliningrad region, Latvia, Lithuania, Luxemburg, Macedonia, Moldova, Poland, Portuguese Mainland, Romania, Russia Central, Northwest and South, Sicily, Slovakia, Slovenia, Spanish Mainland, Sweden, Switzerland, The Netherlands, Ukraine, Yugoslavia (=Serbia & Montenegro)].

Pachylister inaequalis (Olivier, 1789)

Material examined: Manisa, Turgutlu, Dagmarmara **900 m**, 2 ex., 11.VI.2004 det. Lackner; 1 ex., 26.VI.2004 det. Anlaş; 1 ex., 30.VI.2006 det. Anlaş. Totally 4 specimens.

Distribution in the world: Europe, Russia: East and West Siberia, Iran, Mongolia, Tajikistan, Turkey, Turkmenistan (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Andorra, Austria, Balearic Islands, Bosnia-Herzegovina, Bulgaria, Crete, Croatia, Cyprus, Czech Republic, European Turkey, French Mainland, Germany, Greek Mainland, Hungary, Italian Mainland, Macedonia, Portuguese Mainland, Romania, Russia Northwest & South, Sardinia, Sicily, Slovakia, Slovenia, Spanish Mainland, Switzerland, Ukraine, Yugoslavia (=Serbia & Montenegro)].

Saprininae C. Č. Blanchard, 1845

Chalcionellus tyrius (Marseul, 1857)

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 1 ex., 26.VI.2004 det. Anlaş. Totally 1 specimen.

Distribution in the world: Armenia, Greece, Russia: South European Territory, West Siberia, Afghanistan, Cyprus, Iran, Iraq, Kazakhstan, Turkmenistan, Turkey, Uzbekistan (Mazur, 2004).

Saprinus caerulescens (Hoffmann, 1803)

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 1 ex., 10.VII.2004 det. Lackner; 2 ex., same data but det. Anlaş; **900 m**; 1 ex., 28.V.2006 det. Anlaş. Totally 4 specimens.

Distribution in the world: Europe, North Africa, Afghanistan, Cyprus, Iran, Israel, Kazakhstan, Saudi Arabia, Syria, Turkmenistan, Turkey, Uzbekistan, Russia: West Siberia, China: Sinkiang and Neotropical Region (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Austria, Azores, Balearic Islands, Bosnia-Hercegovina, Bulgaria, Canary Islands, Corsica, Crete, Croatia, Cyclades Islands, Czech Republic, Dodecanese Islands, European Turkey, French Mainland, Germany, Greek Mainland, Hungary, Italian Mainland, Macedonia, Madeira, Malta, Moldova, North Aegean Islands, Portuguese Mainland, Romania, Russia South, Sardinia, Sicily, Slovakia, Slovenia, Spanish Mainland, Ukraine, Yugoslavia (=Serbia & Montenegro)].

Saprinus georgicus Marseul, 1862

Material examined: Manisa, Turgutlu, Dagmarmara **900 m**; 2 ex., 11.VI.2004 det. Anlaş; 1 ex., 26.VI.2004 det. Lackner. Totally 3 specimens.

Distribution in the world: Europe, North Africa, Afghanistan, Iran, Israel, Jordan, Kyrgyzstan, Kazakhstan, Turkmenistan, Turkey, Uzbekistan (Mazur, 2004); [distributional data from Fauna Europea; www.faunaeur.org: Albania, Bosnia & Herzegovina, Bulgaria, Corsica, Crete, Croatia, Cyclades Islands, Czech Republic, Dodecanese Islands, European Turkey, French Mainland, Greek Mainland, Italian Mainland, Macedonia, North Aegean Islands, Portuguese Mainland, Romania, Russia South, Sardinia, Sicily, Slovakia, Spanish Mainland, Ukraine, Yugoslavia (=Serbia & Montenegro)] .

Saprinus stussineri Reitter, 1909

Material examined: Manisa, Turgutlu, Dagmarmara **900 m**; 1 ex., 26.VI.2004 det. Lackner. Totally 1 specimen.

Distribution in the world: Azerbaijan, Albania, Armenia, Bulgaria, Croatia, Greece, Iran, Syria, Turkey (Mazur, 2004).

Saprinus vermiculatus Reichardt, 1923

Material examined: Manisa, Turgutlu, Dagmarmara **600 m**; 1 ex., 15.IV.2004 det. Lackner;

1 ex., same data but det. Anlaş. Totally 2 specimens.

Distribution in the world: Georgia, Greece, Italy, Romania, Ukraine, Cyprus, Iran, Israel, Jordan, Lebanon, Turkey (Mazur, 2004).

DISCUSSION

In this study 138 specimens of 12 species belonging to Histeridae were recorded (Table 1, Figure 1). Among them, *Atholus scutellaris* Erichson, 1834 is the first record for Turkish fauna.

Previously *Hister quadrimaculatus* Linnaeus, 1758 was recorded from Manisa province by Tezcan & Yélamos (2004) and the other species were recorded first time for the local fauna of Manisa province. Including new additional record, Turkish Histeridae fauna now stands at 121 species and subspecies belonging to 40 genera.

From the species evaluated in present study, 8 were recorded from area located at 600 m and 9 were recorded from area located at 900 m above sea level. In 2004 the number of species was 12 and in 2006 it was six. The number of species found only at 600 m was three; the number only found at 900 m was four; the number found at both two areas was five. The number of species found in 2004 was six and the number of species found both in 2004 and 2006 was six.

The total number of specimens collected in the area located at 600 m was 26 and 112 in the area located at 900 m. In 2004 the number of specimens was 83 and in 2006 it was 55.

The dominant species was ***Hister illigeri*** (102) with ***Atholus bimaculatus*** (9) and ***Hister quadrimaculatus*** (5) following. The number of specimens and species during two years period sampling were given in Figure 2.

Table 1. List of Histeridae species collected in different locations in 2004 and 2006.

Species	2004		2006		Sum
	600 m	900 m	600 m	900 m	
Atholus bimaculatus	3	4	2		**9**
Atholus scutellaris	2				**2**
Hister illigeri	3	52	5	42	**102**
Hister quadrimaculatus	2		2	1	**5**
Hister sepulcharis	1	2		1	**4**
Margarinotus carbonarius		1			**1**
Pachylister inaequalis		3		1	**4**
Chalcionellus tyrius	1				**1**
Saprinus caerulescens	3			1	**4**
Saprinus georgicus		3			**3**
Saprinus stussineri		1			**1**
Saprinus vermiculatus	2				**2**
Total	**17**	**66**	**9**	**46**	**138**

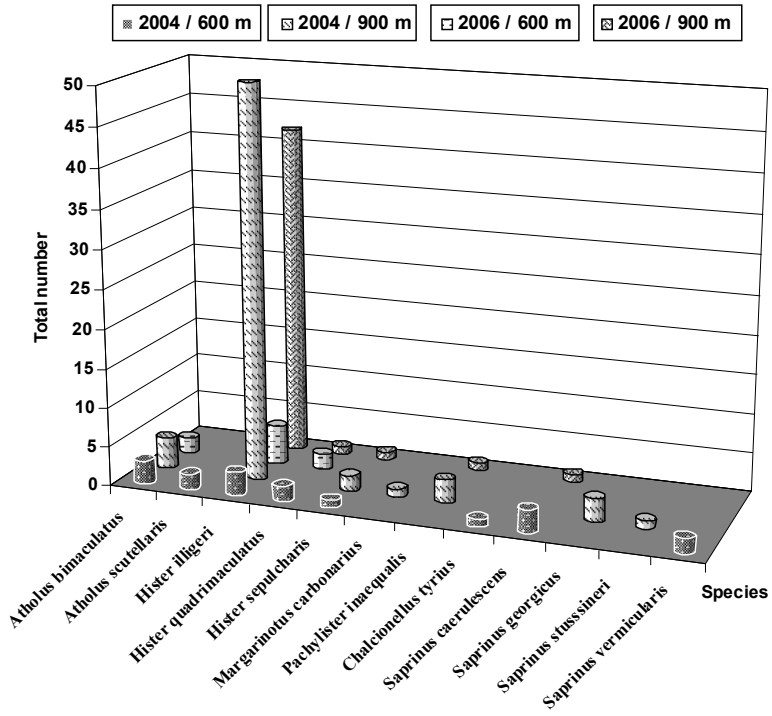

Fig. 1. Histeridae species and the number of specimens of each species at different localities and years in western Turkey.

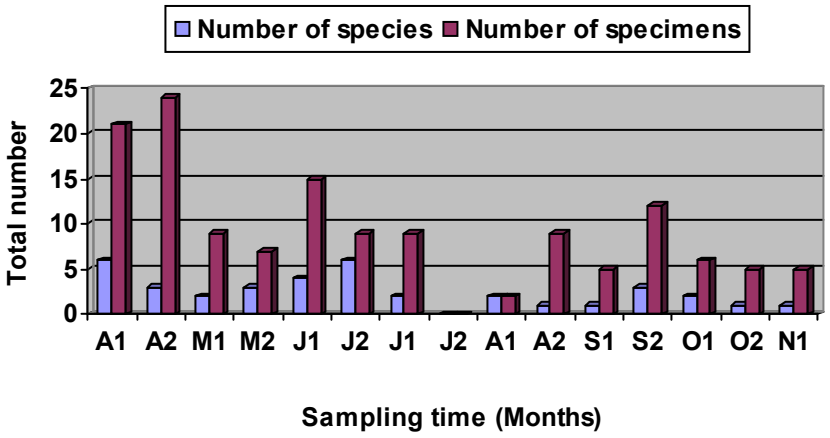

Fig. 2. Total number of specimens and species during sampling period (A to N: April to November; 1: the first half of each month; 2: the second half of each month).

Six species were collected in April and June and the number of species was 45 and 24 at the same months. In addition, five specimens belonging to one species were collected in November and nine specimens belonging to two species were collected in July during the two-year sampling period.

It is expected that knowledge on Histeridae fauna of cow dung will rise with further studies.

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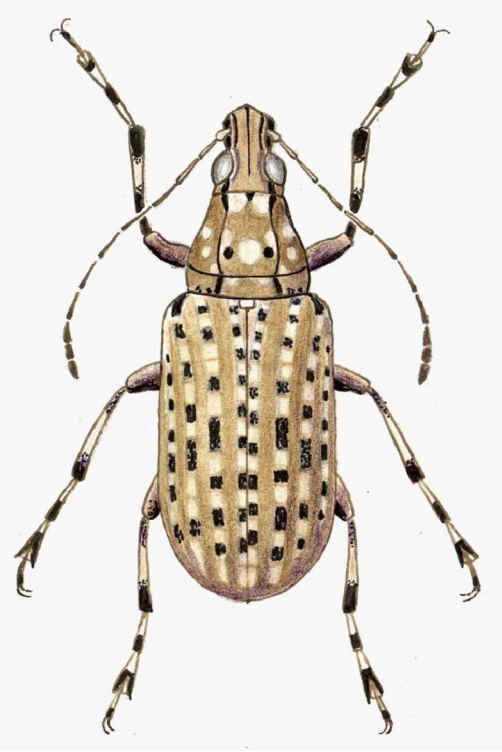

One of the drawings of G. Miländer. A beetle of the family *Anthribidae* from the island of Sumatra.

Georg Miländer

is an animalist with 50 years of drawing experience.

He is specialised on drawing beetles and butterflies.

He has made black-and-white and also coloured illustrations for a number of determination books, monographies and also makes single drawings.

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