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Contribution to the study on the Turkish Pentatomoidea (Heteroptera)
IV. Family: Acanthosomatidae Stal 1864

N.Lodos* F.Önder*

Summary

This paper is a continuation of the authors' previous works (see Lodos and Önder, 1978a; Lodos ve Önder, 1978b, 1979) which devoted only the family of Acanthosomatidae. As it was stated before, all the materials are collected by us in the different parts of Turkey and deposited in the Department of Entomology and Agricultural Zoology, University of Ege, Izmir.

Authors' main aim is to give informations about this family, its genera and species to the Turkish students and colleagues. For this purpose, informations are given about morphology, biology, distribution, host plants, keys and taxonomic notes.

In this work, a total of 6 species belong to 4 genera are treated namely **Cyphostethus tristriatus** (F.), **Acanthosoma haemorrhoidale** (L.), **Elasmucha grisea** (L.), **E.antennata** Reut., **E.eckerleini cypria** Jos., **Elasmostethus interstinctus** (L.) of which the last two species are new records for Turkey. The distribution of these species are shown in Fig.3.

Introduction

No comprehensive study on the Turkish fauna of Acanthosomatidae has ever been published in this country. Only Önder and Lodos (1978) gives some general informations on this family; Seidenstücker (1957), Stichel (1961, 1962) and Lodos et al. (1978) list some species in their works.

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The family name, Acanthosomatidae, which derivated from the latin terms, "akantha=spine" and "soma=body" means "spined body" (Önder ve Lodos, 1978).

Some authors, i.e. Miller (1956), China and Miller (1959), Stichel (1960,1961,1962) and Slater and Baranowski (1978) are considered this group as a subfamily level. Leston (1953) elevated it to the family rank. However, Kumar (1974) in his generic revisional work, again treated this group as a family rank of which we also agree and followed in this work.

Family : Acanthosomatidae

Synonym : Acanthosomidae Stal 1865

Acanthomiens Mulsant et Rey 1866

Species of oval-suboblong, anteriorly angulate. Teguments glabrous and shining, punctured strongly. Head elongate and declivent moderately; the apex of tylus free; bucculae somewhat salient; rostrum moderately thick and usually extending to the hind coxae; antennae moderate with 5 segmented, antenniferous tubercle projecting, first antennal segment usually distinctly extending beyond the apex of head, or sometimes not reaching to the apex of head. Pronotum hexagonal, anteriorly oblique; lateral angles more or less projecting. Scutellum relatively short, its apex usually angulate. Mesosternum with a prominent central longitudinal carina or keel which extending towards head between coxae. Abdomen with a median carina and 2nd abdominal spiracles invisible; paired trichobotria on sterna 3-7th, 3rd abdominal segment spinously produced midventrally; 8th abdominal segment of male well developed, not ring like; 6-7th abdominal segment of female usually with the Pendergrast's organs. Legs moderate without spines; tarsi two segmented.

Acanthosomatid eggs are laid in batches in the various number and somewhat narrowed at the cephalic pole. This is also marked by a ring of small micropylar process. They have no pseudoperculum and egg-burster. As the chorion is thin and there is no true lid at hatching it splits vertically in a characteristic fashion. Southwood (1956) states that **Elasmucha grisea** (L.) has exceptionnaly a weak sclerotized egg- burster.

The females of acantosomatids, except **Cyphostethus tristriatus** (F.) sit over the eggs and also over the first instar larvae. The young larvae remain together until the second instar.

Majority species are phytophagous. They feed on the fruits of decidious and forest trees. Some species feeding on carrion. Cannibalism has also been known to occur.

Species are widely distributed and have been recorded from Africa, India, Java, the Philippine Is., Australia, parts of the Palearctic Region and from Mexico (Miller, 1956).

According to Kumar (1974) and Kerzhner (1964 a) this family covers 56 valid genera and more than 200 species in the world, respectively. At the moment 4 genera and 6 species of this family representing in Turkey.

The key to the genera of Acanthosomatidae

1. First antennal segment distinctly extending beyond the apex of head 2

—First antennal segment not extending beyond the apex of head..... ..... **Cyphostethus**

2. Mesosternal carina somewhat extending beyond the basal margin of prosternum but, not extending backwards between mid coxae .... **Acanthosoma**

—Mesosternal carina not extending beyond the basal margin of prosternum but, extending backwards between mid coxae, sometimes reaching hind coxae 3

3. Connexivum unicolored ..... **Elasmostethus**
—Connexivum maculated with black ..... **Elasmucha**

Genus **Cyphostethus** Fieber

Fieber, 1860, p.78. Type-species **Cimex tristriatus**

Fabricius, 1787, p. 293, by monotypy.

Species of medium sized, oval-elongate. Very close to the **Elasmucha** Fieb. with generical characters. But, it can be easily distinguish by the first antennal segment which not extending beyond the apex of head and light colored punctures on the surface of the body. Other characteristies somewhat similar to **Elasmucha** Fieb.

Very small genus, having only three species, one of which occurs in Turkey.

Taxonomic note: Kumar (1974) in his work synonymized **Cyphostethus** Fieb. to **Elasmostethus** Fieb.. But we examined the specimens of both taxa carefully. The following characteristics which tabulated below are sufficient to qualify them as separate genera.

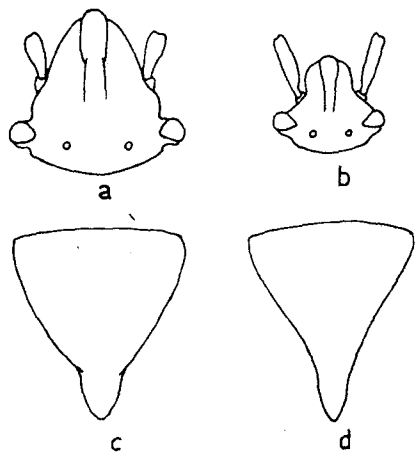


Fig. 1. Some generic characteristics of **Cyphostethus** Fieb. (a,c) and **Elasmostethus** Fieb. (b,d).

Genera	1st antennal segment	Characteristics Lh/wh*	Lh/Fh*	Ls/ws*
Cyphostethus Fieb.	not extending the apex of the head (Fig. 1 a).	0.93	1.45	1.28
Elasmostethus Fieb.	distinctly extending beyond the apex of the head (Fig.1 b).	0.72	1.72	1.60

*) Lh: Total length of head (Fig.1 a,b); Wh: Width of head (Fig.1 a,b); Fh: Length of the head in front of eyes (Fig.1 a,b); Ls: Length of the tip of scutellum (Fig.1 c,d); Ws: Width of the tip of scutellum (Fig.1 c,d).

Beside the above characteristics, general shape of male pygophore is distinctly different in both genera. However, Kumar **(l.c:)** could not examine the male specimens of **C.tristriatus** F., Therefore, the genus of **Cyphostethus** Fieb. is treated here as a valid one.

Cyphostethus tristriatus (Fabricius) (Fig.2)

Fabricius, 1787, Mant. Ins., 2, p.293.

Synonym: **Cimex lituratus** Pnz. 1797 non F.

Acanthosoma pictus Curt. 1824

A.clypeatus Burm. 1835

A.pictipennis Curt. 1852

Species of oval-elongate, anteriorly angulate and medium sized. General color light greenish yellow, clavus, mesocorium and some part of lateral margins of pronotum reddish. Surface of the body punctured with the same color. Head elongate, lateral margins slightly sinuated in front of eyes, apex somewhat rounded; tylus dilated at its apex and extending somewhat beyond of juga; antennae yellowish or reddish yellow, last two segments darker; first segment not reaching to the apex of head; second segment somewhat longer than third; rostrum long, usually extending to the apical margin of second ventral segment. Pronotum strongly punctured; lateral margins somewhat sinuate; lateral angles somewhat rounded, not distinctly projecting. Scutellum elongate, its apex pointed and pale in color. Membranal suture somewhat curvilinear; membrane hyaline and one brownish spot below the centre of its posterior margin. Tergum black. Connexivum yellowish. Mesosternal carina not reaching to the base of prosternum or sometimes hardly reaching. Legs yellowish green or sometimes reddish. Venter yellowish or yellowish green and punctured with

the same color; with a longitudinal carina on the middle; spinous process of third abdominal segment reaching the middle coxae.

Length: ♂: 10,1 mm., ♀: 10,8 mm.

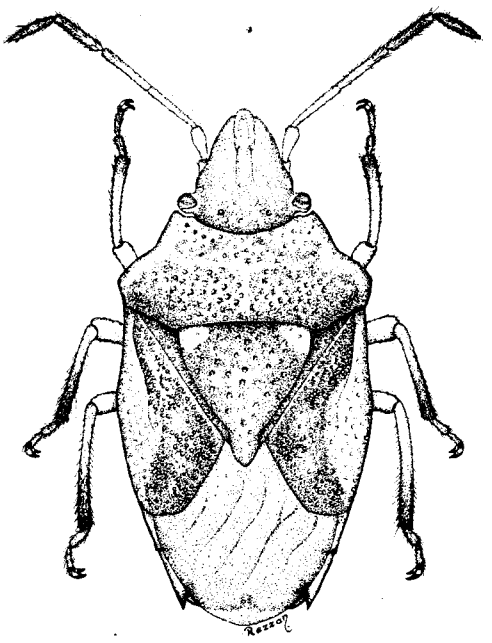


Fig. 2. **Cyphostethus tristriatus**

Distribution

In the world: Species of European element, recorded from Sweeden, Norway, West and South Russia, Poland, Denmark, Germany, Netherlands Belgium, England, Portugal, Spain, France, Italy, Switzerland, Austria, Czechoslovakia, Hungary, Yugoslavia, Albanien, Romania, Bulgaria, Greece, Turkey (Jensen-Haarup, 1912; Oshanin, 1912; Kiritshenko, 1951; Seidenstücker, 1957; Eva, 1959; Southwood and Leston, 1959; Stichel, 1961, 1962; Perrier, 1963; Kerzhner, 1964a; Wagner, 1966; Servadei, 1967; Lodos et al., 1978).

in Turkey: This species was previously listed from Niğde (Ulukışla: Çiftehan) (Seidenstücker, 1957) and Izmir (Gümüşsu) (Lodos et al., 1978). In this study, it has been collected from Izmir (Gümüşsu), 9.4.1973, on **Cupressus sempervirens,** 1 ♂, 1 ♀, Izmir (Bornova), 29.7.1977, on **Platanus orientalis,** 1 ♀, Kütahya, 2.5.1973, on **Pinus** sp. 1 ♂. The distribution of this species is shown in Fig 3.

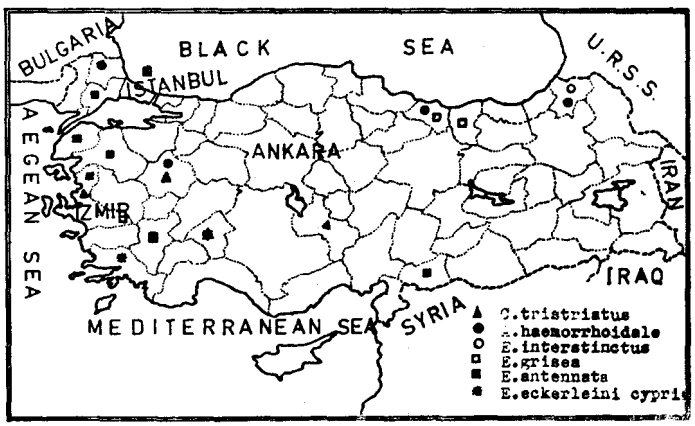


Fig. 3. The distribution of the acanthosomatid species

Host plants

Juniperus communis, J.excelsa, Cupressus sempervirens, Pinus silvestris, Abies alba, Cryptomeria sp., **Sarothamnus scoparius, Mespilus germanica, Populus** spp. (Seidenstücker, 1957; Southwood and Leston, 1959 Stichel, 1961; Perrier, 1963; Kerzhner, 1964a; Lodos et al., 1978).

In this study, **Platanus orientalis** has been found as a new host for this species.

Genus **Acanthosoma** Curtis

Curtis, 1824.p.24. Type-species **Cimex haemorrhoidalis** Linnaeus, 1758, p.444, by monotypy.

Synonym: **Sastragala** A.-S.1843; **Anaxandra** Stal 1876

Species of oval-elongate, somewhat convex, anteriorly angulate. Surface glabrous, shining; irregularly and distinctly punctured. Head elongate; tylus dilated at its apex; eyes distinct; first antennal segment somewhat

curved and extending distinctly beyond the apex of head, first and second antennal segments subequal; bucculae somewhat distinct; rostrum usually reaching to the hind coxae. Pronotum somewhat hexagonal; lateral angles distinctly projecting. Scutellum relatively short, its apex somewhat pointed. Membranal suture rectilinear or subrectilinear. Mesosternum with a distinct centrale longitudinal carina which extending forwards far beyond anterior coxae. Third ventral segment providing a spinous process which extending to the middle coxae. Abdomen with a distinct median carina. Legs moderate.

Number of species occuring in Australian, Oriental and Palearctic regions of which only one species occurs in Turkey.

Acanthosoma haemorrhoidale (Linnaeus) (Fig.4)

Linnaeus, 1758. Syst.Nat.,ed.X,p.444:24.

Synonym: **Cimex bidens** Sulzer 1761, non L.

C.pabulinum Harr. 1781

C.sanguineotuberculatum Goeze 1778

C.pungens Geoffr. 1785

C.carunculatum Gmel. 1789

C.retusum Thunb. 1822

General color bright reddish yellow, more or less with green the posterior half of pronotum, scutellum and exocorium; surface distinctly punctured with black. Head elongate, reddish yellow in color; lateral margins somewhat sinuate in front of eyes; tylus distinctly dilated at its apex, with a median sulcus on the apical part; juga somewhat shorter than tylus; antennae black, first segment yellow or yellowish green, sometimes the base of second, third, fourth and fifth segments narrowly yellowish green or reddish; about half of the first antennal segment extending beyond apex of head; second segment distinctly longer than third; rostrum extending to the hind coxae. Lateral margins of pronotum concave; lateral angles distinctly projecting, their apices somewhat rounded; cicatrices distinct and usually reddish in color. Scutellum triangular, somewhat short, its apex pointed. Corium densely and regularly punctured with black; membranal suture rectilinear; membrane yellowish brown or yellowish green. Tergum and connexivum yellowish green, distally red. Centrale longitudinale carina of mesosternum extending beyond the basal margin of pro-

sternum, spinous process of third ventral segment reaching almost to fore coxae. Legs light green. Venter yellow-green or yellow-brown, without puncturations; with a longitudinal carina of the middle of abdomen.

Length: 15-17 mm.

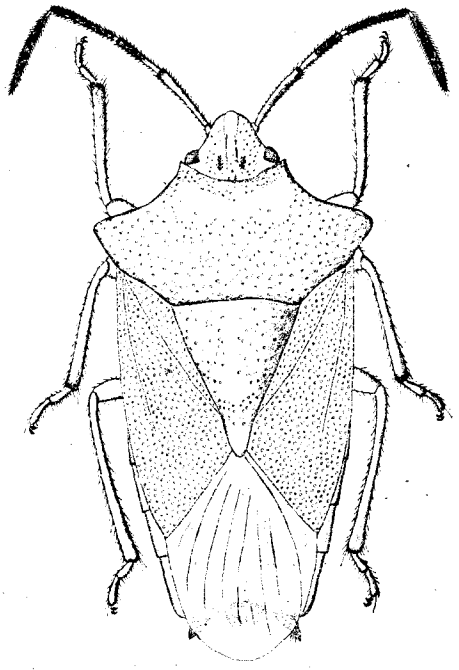


Fig. 4. **Acanthosoma haemorrhoidale**

Distribution

In the world : Species of Euro - Siberian element. Recorded from Sweeden, Norway, Finland, West and South Russia, Poland, Denmark, Germany, Netherlands, Belgium, England, Ireland, France, Switzerland, Austria, Hungary, Portugal, Spain, Italy, Yugoslavia, Albania, Romania, Bulgaria, Greece, Iran, Siberia, China, Korea and Japan (Lambertie, 1910; Jensen-Haarup, 1912; Oshanin, 1912; Ayres et al., 1926; Vidal, 1949; Kiritshenko, 1951; Otten, 1956; Eva, 1959; Southwood and Leston, 1959; Stichel 1961, 1962; Perrier, 1963; Kerzhner, 1964 a; Mayne, 1965; Wagner, 1966; Servadei, 1967; Lodos et al., 1978)

in **Turkey**: It was previously recorded from Turkey only in Kırklareli (Pınarhisar) which collected on **Quercus** sp. (Lodos et al., 1978). The distribution, host plants, collecting dates and numbers of **A.haemorrhoidale** is tabulated as follows:

Collecting place	Date	Host plant	Number of specimens ♂	♀
Artvin-Hopa	30.8.1971	**Corylus avellana**	—	1
Artvin-Borçka	22.8.1973	**Alnus** sp.	—	1
Kütahya	19.7.1962	**Pirus communis**	1	—
Ordu	23.7.1965	**C.avellana**	—	1

As one can easily understands from the above informations, this species distributes widely in Turkey and it is possible that it might be found in most part of Turkey especially in the deciduous forest zone (See also Fig.3).

Host plants

Corylus avellana, Betula verrucosa, B.alba, Carpinus betulus, Fagus silvatica, Acer campestris, Quercus robur, Rubus saxatilis, Vaccinium vitis-idea, Potentilla alba, Melittis melissophyllum, Populus nigra, P.tremula, Arbutus unedo, Lilium martagon, Rosa spp., **Crataegus oxyacantha, Pirus aucuparia, P.communis, Prunus padus, Spiraea** spp., **Cornus sanguinea, Sambucus** spp., **Viburnum opulus, Tilia europea, T.parvifolia, Sorbus** spp., **Juniperus communis, Picea excelsa** and **Pinus silvestris** (Ayres et al.,1926; Otten, 1956; Eva, 1959; Southwood and Leston, 1959; Stichel, 1961; Perrier 1963; Kerzhner, 1964a; Mayne, 1965).

Otten (1956) states that this species feeds on the fruits of its host-plants and damages on the pears in Norway.

Genus **Elasmostethus** Fieber

Fieber, 1860, p.78. Type-species **Cimex interstinctus** Linnaeus, 1758, p.445 (=**Cimex dentatus** De Geer, 1773, p.260), by monotypy.
Synonym: **Oxydalus** M.-R. 1866

Stictocarenus Stal 1871

Dicholothrium Bred. 1903

Ditaenius Bergroth 1912

Species of oval-elongate, somewhat convex. Head somewhat elongate; first antennal segment distinctly extending the apex of head; maxillary tubercle absent, rarely just indicated. Pronotal angles slightly produced and rounded. Wings extending or not beyond posterior end of abdomen. Rostrum extending from about middle of hind coxae to posterior end of 3rd abdominal sternum; bucculae not united posteriorly. Prosternum with a deep median groove; mesosternal carina extending forward to fore coxae and at times to prosternum and head, extending backward between mid coxae, reaching at times between hind coxae. Legs moderate.

Species of this genus occurs in Palearctic, Oriental and Australian regions, extending to the Nearctic region as well.

Elasmostethus interstinctus (Linnaeus) (Fig.5)

Linnaeus, 1758, Syst.Nat.,ed.X,p.445:33.
Synonym: **Cimex dentatus** De G. 1773

C.haemotogaster Schrk. 1781

Cimex bidens Gmel.1788

C.arboreus Gmel. 1788

C.collaris F. 1803

Pentatoma stolli Le Pel.Serv. 1825

Cimex lituratus Zett. 1840

General color brownish green, reddish green or yellowish green with black puncture. Lateral margins of head distinctly sinuate in front of eyes; apex of tylus dilated; tylus longer than juga. Antennae yellowish brown last two segments blackish brown; rostrum yellowish and extending somewhat beyond to the middle coxae. Lateral margin of pronotum straight lateral angles somewhat projecting and blackish; porterior margin of pronotum reddish. Scutellum reddish with yellow margins and apex. Clavus and some parts of corium reddish; exocorium yellowish; connexium yellow; abdominal tergum red; membrane hyaline with brown macula on the lateral sides. Venter and legs yellowish; apex of tibiae and tarsi brownish.

Length: ♂: 9,9mm, ♀: 11.7mm.

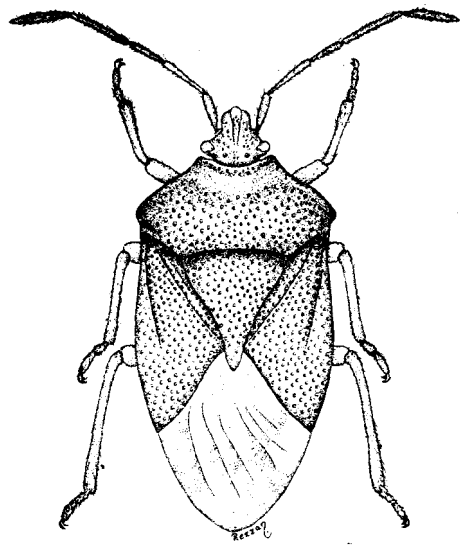


Fig. 5. **Elasmostethus interstinctus**

Distribution

In the world : Species of Euro - Siberian element, recorded from Sweeden, Norway, Finland, West and South Russia, Poland, Denmark, Germany, Netherlands, Belgium, Scotland, Ireland, England, Portugal, France, Italy, Switzerland, Austria, Czechoslovakia, Hungary, Romania, Bulgaria, Kamchatka, China, Japan (Lambertie, 1910; Oshanin, 1912; Jensen-Haarup, 1912; Ayres et al., 1926; Vidal, 1949; Kiritshenko, 1951; Eva, 1959; Southwood and Leston, 1959; Stichel, 1961, 1962; Perrier, 1963; Kerzhner, 1964a; Wagner, 1966; Servadei, 1967).

in Turkey: This species constitues a new record for Turkey. It has been collected from Artvin (Borçka-Göktaş), on 12.9.1971, on **Vaccinium** sp., 2 ♂♂, 1 ♀ and 13 nymphs; and also from Artvin (Karçkar Mountain) on 22.8.1973, on **Populus** sp., 3 ♂♂, (See also Fig.3).

Host plants

Betula alba, Corylus avellana, Carpinus betulus, Alnus viridis, Fagus silvatica, Quercus pedunculata, Salix repens, Populus tremula, Tilia spp.,

Crataegus spp., **Fraxinus excelsior, Hedera helix, Cornus sanguina, Lonicera xylosteum, Ledum palustre, Picea excelsa, Juniperus communis** (Lambertie, 1910; Ayres et al., 1926; Southwood and Leston, 1959; Stichel 1961; Perrier, 1963; Kerzhner, 1964a).

By this study, in addition to these host-plants there have been found **Vaccinium** sp. as its host-plant.

Genus **Elasmucha** Stal

Stal, 1864.p.54. Type-species **Cimex ferrugatus** Fabricius, 1787, p.382, fixation by Kirkaldy, 1909, p. 175.

Synonym: **Clinocoris** Hahn 1834

Sastragala Fieb. 1860, non A.-S.

Meadorus M.-R. 1866

Pseudostollia Bred. 1901

Galasastra Bred. 1903

Generically allied to **Elasmostethus** Fieb. but can be easily distinguish with maculate connexivum. Species of medium sized. Head somewhat projecting. Scutellum somewhat short, its apex pointed. Mesosternal carina extending towards beyond the base of prosternum. Spinous process of third abdominal segment extending to the middle coxae. Medial carina of abdomen distinct. Legs moderate.

Number species occuring in Palearctic, Oriental and Australian regions of which only three species of this genus representing in Turkey.

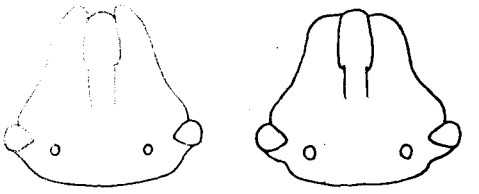
Key to the species of **Elasmucha**

1. Tylus shorter than genae (Fig.6a) ..... **E.eckerleini cypria** Jos.

—Tylus not shorter than genae (Fig.6b) 2

2. Scutellum with a distinct basal blackish macula; rostrum reaching at best to the hind coxae ..... **E.grisea** (L.)

—Scutellum without blackish basal macula; rostrum extending beyond hind coxae ..... **E.antennata** (Reut.)



a b

Fig. 6. Some morphological characters of **Elasmuscha** spp.

Elasmucha grisea (Linnaeus) (Fig.7)
Linnaeus, 1758. Syst.Nat.,ed.X,p.445:32.

Synonym: **Cimex betulae** De G. 1773
C.alni Ström 1783
C.agathina F. 1794
Acanthosoma interstinctum Klt.1846 non L.
Elasmostethus fieberi Jak. 1864
E.jakovlevi Kir.1911 (Kerzhner, 1964b)

General color shining light gray-brown, reddish yellow or reddish brown, usually lateral angles of pronotum and membranal suture reddish. Surface of the body distinctly and sparsely punctured with black. Lateral margins of head somewhat sinuate in front of eyes; apex of tylus dilated; juga as long as or somewhat shorter than tylus; eyes distinct; antennae pale, last segment black or sometimes only its apex black; rostrum yellowish and extending somewhat beyond to the middle coxae. Lateral margins of pronotum rectilinear or subsinuate; lateral angles angulate and somewhat projecting; basal margin against scutellum somewhat concave. Scutellum with black macula on the base and its distal part whitish yellow. Corium somewhat less strongly punctured than scutellum and pronotum, membrane hyaline. Tergum black. Connexivum yellowish red, apex and base of each connexival segment spotted narrowly with black. Venter and legs yellowish; tarsi brown.

Length: 7-9 mm.

Distribution

In the world: Species of Euro-Siberian element. Recorded from Sweeden, Norway, Finland, West and South Russia, Poland, Denmark, Germany Netherlands, England, Ireland, France, Switzerland, Austria, Czechoslo-

vakia, Hungary, Albania, Greece, Bulgaria, Turkey and Siberia (Lambertie 1910; Jensen-Haarup, 1912; Oshanin, 1912; Vidal, 1949; Kiritshenko, 1951; Eva, 1959; Stichel, 1961, 1962; Perrier, 1963; Kerzhner, 1964a,b; Wagner, 1966; Servadei, 1967; Josifov, 1971; Lodos et al., 1978).

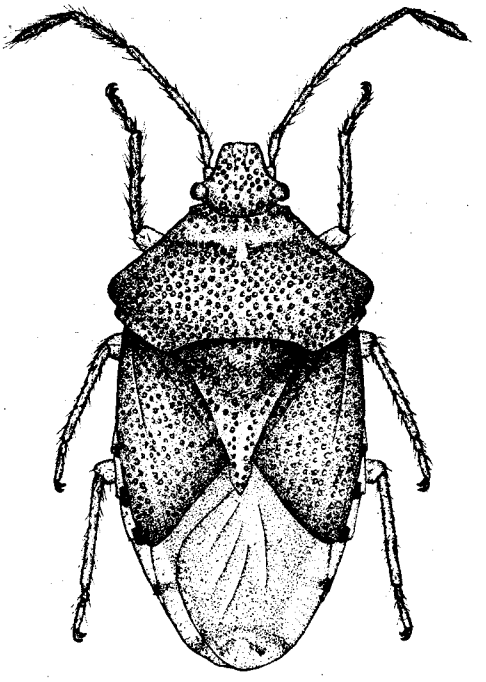


Fig. 7. **Elasmucha grisea**

in Turkey: This species has been recorded in the different areas by Lodos et al. (1978).

The distribution, host plants, collecting dates and numbers of **E.grisea** is tabulated as follows:

Collecting place	Date	Host plant	Number of specimen ♀	♂
Giresun-Şebinkarahisar	12.7.1978	**Planatus orientalis**	—	2
İzmir*	5.7.1961	**P.orientalis**	—	1
Ordu	7.8.1965	**Corylus avellana**	1	—
Ordu-Ünye	4.5.1973	**C.avellana**	—	2
Ordu-Ünye	26.7.1975	**C.avellana**	—	2
Ordu-Perşembe	8.6.1973	**Morus alba**	1	—

*) The data on the label is not certain

Host plants

Betula verrucosa, B.pubescens, Corylus avellana, Carpinus betulus, Alnus incana, A.glutinosa, Fagus silvatica, Quercus pedunculata, Populus alba, P. tremula, Salix spp., **Tilia** spp., **Crateagus** spp., **Acer platanoides, Platanus orientalis, Urtica** spp., **Stachys silvatica, Abies alba, Picea excelsa, Pinus silvestris, Larix decidua** and **Juniperus communis** (Lambertie, 1910, Eva, 1959; Stichel, 1961; Perrier, 1963; Kerzhner, 1964a; Lodos et al., 1978).

In this study it has found a new host plant namely **Morus alba.**

Elasmucha antennata Reuter (Fig.8)

Reuter, 1885. Ent.m.Mag. v. 22, p.37.

Very close to precedent species in cutline. General color uniformly yellow brown, yellow greenish or reddish brown. Surface of the body sparsely punctured with black. Head somewhat elongate, lateral margins slightly sinuate; antennae pale, last segment black or only its apical part blackish. Scutellum unicolorous, without macula on its base and apex. Connexivum with black spot on the apical margin. Venter and legs light yellowish, without marking.

Length: 8.5-9.5 mm.

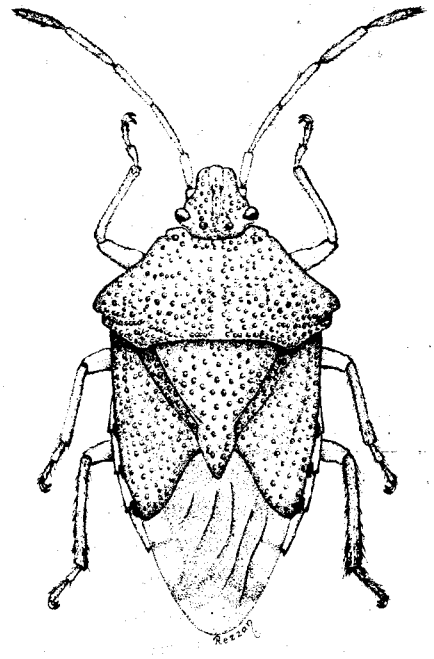


Fig. 8. **Elasmucha antennata**

Distribution

In the world: Species of Pontomediterranean element, recorded up to now only from Greece, Turkey, Aegean Islands and Cyprus (Puton et Noualhier, 1895; Oshanin, 1912; Lindberg, 1948; Hoberlandt, 1955; Stichel, 1961, 1962; Josifov, 1971; Dethier, 1976; Georghiou, 1977; Lodos et al., 1978)

in Turkey: It has been recorded up till now from Gaziantep (Ekbez) (Puton et Noualhier, 1895); Çanakkale (Biga, Lapseki, Çan, Eceabat), Denizli, Isparta (Eğridir), İzmir (Yamanlar Mountain), Muğla (Marmaris) and Tekirdağ (Lodos et al., 1978). Recent studies revealed that from these localities Isparta (Eğridir) and Muğla (Marmaris) the specimens are **E.eckerleini cypria** Jos.

The distribution, host plants, collecting dates and numbers of **E. antennata** is tabulated as follows:

Collecting place	Date	Host plant	Number of specimen ♀	♂
Balıkesir-Dursunbey	18.5.1971	**Alnus** sp.	1	1
Çanakkale-Biga	21.5.1973	**Platanus orientalis**	10	9
-Lapseki	21.5.1973	**P.orientalis**	—	1
-Eceabat	22.7.1973	**P.orientalis**	1	1
-Çan	22.4.1975	**P.orientalis**	—	1
Denizli-Merkez	12.5.1972	**Crataegus** sp.	—	1
İstanbul-Merkez	14.10.1975	**Pirus malus**	—	1
İstanbul-Merkez	18.5.1976	**Pirus malus**	—	1
İzmir-Bornova	12.5.1962			
İzmir-Yamanlar		**Prunus armeniaca**	—	1
Mountain	24.5.1973	**P.orientalis**	1	1
Tekirdağ	26.7.1973	**P.orientalis**	1	1

As one can easilsy understands from the above informations, this species largely distributes in the Western parts of Turkey (See also Fig.3).

Host plants

Alnus orientalis, Crataegus sp. and **Platanus orientalis** (Lindberg, 1948; Stichel, 1961; Josifov, 1971; Georghiou, 1977; Lodos et al. 1978).

Elasmucha eckerleini cypria Josifov (Fig. 9)

Josifov, 1971. Reichenbachia, **13** (25): 240-241.

General color shining gray brown (♂), or reddish brown (♀). Surface of the body distinctly punctured with black. Lateral margins of head sinuate in front of eyes; tylus distinctly shorter than juga; antennae pale, last segment black; rostrum extending to the third abdominal sternum. Lateral margins of pronotum subsinuate; lateral angles somewhat projecting; tergum black (♂) or reddish (♀). Connexium yellowish, apex and base of each connexival segment spotted narrowly with black. Venter and legs yellowish.

Lengeth: 9.0 (♂), 10.1 (♀) mm.

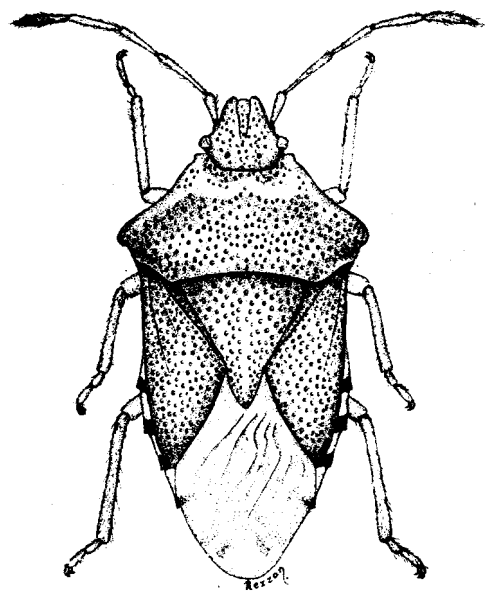


Fig. 9. **Elasmucha eckerleini cypria**

Distribution

The type locality of this subspecies is Kalohorio (Cyprus) (Josifov, 1971). Up to date it has been not found in the another country.

in Turkey: The distribution, host plants, collecting dates and numbers of **E.eckerleini cypria** is tabulated as follows:

Collecting place	Date	Host plant	Number of specimen ♀	♂
Isparta-Eğridir	11.6.1973	**Platanus orientalis**	1	1
Muğla-Marmaris	7.5.1972	**P.orientalis**	1	1
Muğla-Fethiye	9.6.1973	**P.orientalis**	2	—

It is shown that this species strickly distributes in the southernwest region of Turkey which is very near Cyprus (See also Fig.3).

Host plant

Josifov (1971) does not state the host-plant of this subspecies. In this study, all the specimens of this subspecies were found on **Platanus orientalis.**

Özet

Türkiye Pentatomoidea (Heteroptera) üst familyası üzerinde araştırmalar. IV. Familya: Acanthosomatidae Stal 1864

Bu makale yazarların Türkiye Pentatomoidea'ları üzerinde daha önce yaptıkları çalışmaların bir devamıdır (Bkz. Lodos and Önder, 1978a; Lodos ve Önder, 1978b; Lodos ve Önder, 1979) ve sadece Acanthosomatidae familyasını içermektedir. Metin içinde yer alan türlerin tümü, tarafımızdan toplanmış olup kürsümüz koleksiyonunda muhafaza edilmektedir.

Gerek konuyla ilgili meslekdaşlarımıza ve gerekse öğrencilerimize Acanthosomatidae familyasını ve bu familyaya bağlı cins ve türleri tanıtmak başlıca amacımızdır. Bu nedenle metin içinde familya, cins ve türlerle ilgili morfolojik, biyolojik ve taksonomik notlar verilmiştir. Ayrıca cins ve tür teşhis anahtarları da verilmiş ve her türün yayılış ve konukçularından da sözedilmiştir.

Bu çalışmada, Acanthosomatidae familyasına bağlı 4 cins ve 6 tür [**Cyphostethus interstinctus** (F.), **Acanthosoma haemorrhoidale** (L.), **Elasmucha grisea** (L.), **E.antennata** Reut., **E.eckerleini cypria** Jos.] bulunmuş olup bunlardan **E.interstinctus** ve **E.eckerleini cypria** Türkiye için yeni kayıttır.

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References cited

Ayres, B., J.G. de Barros e Cuncha and A.F. de Seabra, 1926. Sinopse dos Hemipteros Heteropteros de Portugal. Memorias e Estudos do Museu Zoologico da Universidade de Coimbro, **1** (3):69-170

China, W.E. and N.C.E. Miller, 1959. Checklist and keys to the families and subfamilies of the Hemiptera-Heteroptera. **Bull. Brit Mus. (N.H.) Ent., 8**(1): 1-45.

Cobben, R.H., 1968. Evolutinary trends in Heteroptera. Part I. Eggs, architecture of the shell, gross embryology and eclosion. Centre for Agricultural Publishing and Documentation, Wageningen, 475 pp.

Dethier, M., 1976. Héteroptères de Grece. **Bull. Soc. Ent. Suisse, 49:** 17-29.

Eva, H., 1959. Heteroptera II. Poloskak II. Fauna Hungarica 46. Akademiai Kiado, Budapest, pp. 21-286.

Georghiou,G.P., 1977. The insects and mites of Cyprus. Kiphissia, Athens, 347 pp.

Hoberlandt, L., 1955. Results of the zoolobical scientific expedition of the National Museum in Praha to Turkey. 18. Hemiptera IV. Terrestrial Hemiptera-Heteroptera of Turkey. **Acta ent. Mus. natn. Prague,** Suppl. 3:1-264.

Jensen-Haarup, A.C., 1912. Taeger. Danmarks Fauna. G.E.C. Gads Forlag, Kobenhavn, 300 pp.

Josifov, M., 1971. Gattung **Elasmucha** Stal, 1864, im Östlichen Mittelmeerraum (Heteroptera, Acanthosomatidae): **Reichenbachia, 13** (25): 239-243.

Kerzhner, I.M., 1964a. "19. Order Hemiptera (Heteroptera). pp. 851-1118." Keys to the insects of the european USSR. vol I. Apterygota, Palaeoptera, Hemimeta-Bola. Editor: G.Ya Bei-Bienko (Translated from Russian, 1967). Israel Program for Scientific Translations, Jerusalem, 1214 pp.

————, 1964b. On the synonymy of shield bugs (Heteroptera, Pentatomoidea) in the fauna of the USSR and neighboring countries. **Entomol. Rev.,** 43(2):185-188.

Kiritshenko, N.A., 1951. Hemiptera. Izdatelstuo Akademii Nauk SSSR, Petrograd, 423 pp.

Kumar, R., 1974. A revision of world Acanthosomatidae (Heteroptera: Pentatomoidea): keys to and descriptions of subfamilies, tribes and genera with designations of types. **Australian Jour.** Zool. Suppl. Ser. No. 14:1-60.

Lambertie, M., 1910. Contribution à la faune des Hémiptères, Héteroptères, Cicadines et Psyllids du Sud-Ouest de la France. Narbonne, 102 pp.

Lindberg, H., 1948. On the insect fauna of

Cyprus. Results of the expedition of 1939 by Harald, Hakan and P.H. Lindberg I-II I. Introduction. II. Heteroptera und Homoptera Cicadina der Inseln Zypern. **Commentat. biol., 10**(7):1-75.

Lodos, N., F. Önder, E. Pehlivan ve R. Atalay, 1978. Ege ve Marmara Bölgesinin zararlı böcek faunasının tesbiti üzerinde çalışmalar. [Curculionidae, Scarabaeidae (Coleoptera); Pentatomidae, Lygaeidae, Miridae (Heteroptera)]. Zir.Müc. Zir. Kar. Gn. Md. Yayınları, 301 pp.

Lodos, N. and F. Önder, 1978a. Contribution to the study of Turkish Pentatomoidea (Heteroptera). I. **Tarisa** A.S. **Türk Bit. Kor.Derg., 2**(1): 15-29.

——— ve ———, 1978b. Türkiye Pentatomoidea (Heteroptera) üst familyast üzerinde araştırmalar. II. Familya: Plataspidae Dall. **Ibid., 2**(4): 195-209.

——— and ———, 1979. Türkiye Pentatomoidea (Heteroptera) üst familyası üzerinde araştırmalar. III. Familya: Cydnidae Billberg. E.Ü. Ziraat Fakültesi Yayınları No: 381 (In Press).

Mayne, R., 1965. Les Hémiptères de la réserve domaniale du Westhook Pentatomoidea. Ministères de l'Agriculture, Service des Réserves Naturelles Domanials et de la Conservation de la Nature. Travaux-No. 1,47 pp.

Miller, N.C.E., 1956. The biology of the Heteroptera. Leonard Hill (Books) Limited, London, 162 pp.

Oshanin, B., 112 Katalog der paläarktischen Hemipteren (Heteroptera, Homoptera-Auchenorhyncha und Psylloidea). Verlag von R. Friedlander und Sohn, Berlin, 187 pp.

Otten, E., 1956. "Heteroptera, pp. 1-149." Handbuch der Pflanzenkrankheiten. Band 5, Lief. 3. Heteroptera, Homoptera, Editor: H. Blunck. Verlag Paul Parey Berlin und Hamburg, 399 pp.

Önder, F. ve N. Lodos, 1978. Heteroptera. Türkiye ve Palearktik bölge familyaları hakkında genel bilgiler. Ege Üniversitesi Ziraat Fakültesi Yayınları No. 359, 141 pp.

Perrier, R., 1963. "Hémiptères". La faune de France. IV. Librairie Delagrave, Paris, 243 pp.

Poisson, R., 1951. "Ordre des Héteroptères, pp. 1657-1803." Traité de Zoologie. Anatomie, Systematique, Biologie, Tome X. Insectes superieurs et Hémiptéroides (Fas II.). Editor: P.P. Grassé. Masson et Cie Editeurs, Paris, pp. 976-1948.

Seidenstücker, G., 1957. Heteroptera aus Anatolien. I. **Istanb. Univ. Fen. Fak. Mecm., 22**: 179-189.

Servadei A., 1967. Fauna d'Italia. Rhynchota (Heteroptera, Homoptera - Auchenorrhyncha). Edizioni Calderini, Bologna, 851 pp.

Slater, J.A. and R.M. Baranowski, 1978. How to know the true bugs. The Pictured Key **Nature Series.** Wm.C.Brown Company Publishers, Iowa, 256 pp.

Southwood, T.R.E., 1956. The structure of the eggs of the terresstrial Heteroptera and its relationship to the classification of the group. **Trans.Roy.Ent.Soc.London, 108** (6): 163-221.

Southwood, T.R.E. and D. Leston. 1959. Land and water bugs of the British Is'es. Frederich Warne and Co. Ltd., London and NewYork, 436 pp.

Stichel, W., 1960. Illustrierte Bestimmungstabellen der Wanzen. II. Europa. (Hemiptera-Heteroptera, Europae). 4 (14): 417-448.

————, 1961. **Ibidem.**, 4(21): 641-672.

————, 1962. **Ibidem**, 4(25): 769-800.

Vidal, J., 1949. Hémiptères de l'Afrique du Nord et des Pays Circum-Mediterranéens **Mém. Soc. Sci. Nat: Maroc, 48:** 1-238.

Wagner, E., 1966. Die Tierwelt Deutschlands und der angrenzenden Meeresteile. 54 Teil. Wanzen oder Heteropteren. I. Pentatomorpha. Veb Verlag Fischer, Jena, 235 pp.