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Preliminary list of Piesmatidae (Heteroptera) with notes on distribution and importance of species in Turkey

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Summary

In this study, six species belonging to the family Piesmatidae, in Turkey, are enumerated with their detailed synonymy. These species are: ***Piesma maculatum*** (Lap.), ***P. quadratum*** (Fieb.), ***P. silenes*** (Horv.), ***P. salsolae*** (Beck.), ***P. kolenatii*** (Fieb.) and ***P. capitatum*** (Wolff). Their distribution, occurrence as well as biological notes comprising hosts, hibernation sites and economic importance are briefly discussed.

Key words: Turkey, ***Piesma maculatum, P. quadratum, P. silenes, P. salsolae, P. kolenatii, P. capitatum,*** Piesmatidae.
Anahtar sözcükler: Türkiye, ***Piesma maculatum, P. quadratum, P. silenes, P. salsolae, P. kolenatii, P. capitatum,*** Piesmatidae.

Introduction

The Heteropterous fauna of Turkey has received much consideration and regarded as relatively known compared with neighbouring areas in the Middle East. This is due to the comprehensive work carried recently by many heteropterists such as. L. Hoberlandt, G. Seidenstücker, E. Wagner, R. Linnavuori, N. Lodos, F. Önder etc. However, some families still were relatively less investigated, specially small families such as Piesmatidae. It seems justifiable that any contribution to elucidate the different aspects of this family will be useful.

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Piesmatidae Amyot and Serville, 1843

Amyot and Serville, 1843. **Hist. nat. Insect.** Hemip; 300.

Type-genus: ***Piesma*** Le Peletier and Audinet-Serville, 1825.

Syn.: Zosmenidae Dohrn, 1859.

Zosmoridae Douglas and Scott, 1865.

Piesma (Greek) = flat, compressed.

English common name = Ash grey leaf bugs, piesmatid.

German common name = Rübenwanzen.

Turkish common name = Gri yaprak tahtakuruları (Önder and Lodos, 1986).

Piesmatidae is a small family with few known genera such as ***Piesma, Miespa, Mcateella*** and ***Thaicoris.*** The dominant genus is ***Piesma*** which was recently divided into three subgenera. Piesmatids are distributed throughout the world. The members of this family are small (1.5 - 4.0 mm), oval-elongate, flattened and generally their colour is brownish grey. The most striking feature of piesmatids is the lace-like reticulation of the pronotum and forewings which distinguish them from all families except Tingidae. However, investigations of wing venation, strigil, eggs and salivary glands have shown that Piesmatidae is closely related to Lygaeidae and Berytidae (Southwood and Leston, 1959). Genal plates of head protrude anteriorly forming 2 small processes. Ocelli present at least in macropterous forms; rostrum and antennae 4-segmented; hemelytra with dense reticulation; macropterous forms with almost completely transparent membrane, in brachypterous forms the hemelytra cover the whole abdomen but not overlapping posteriorly; the membrane of fore wing with 4 simple veins; scutellum prominent; normal walking legs with movable coxae; tarsi 2-segmented, claws and arolia present. The opening of scent gland is on metasternum; a stridulatory apparatus is present in male also in female but either ill-developed, rudimentary or not functioning.

Piesmatids are phytoptagous and generally feed on members of Chenopodiaceae, Caryophyllaceae, Amaranthaceae and related families (Southwood and Leston 1959; Kerzhner and Yachewski, 1964; Heiss and Pericart, 1983; Lodos, 1986; Önder and Lodos, 1986). However, the tropical species of ***Piesma*** from Sudan and Chad develop on Leguminosae trees such as ***Acacia nilotica*** and ***Tamarindus.*** This preference is almost similar to that of the Australian genus ***Mcateella***

which lives also on ***Acacia*** (Linnavuori, 1977; Heiss and Pericart, 1983). The known species of this family are more than forty. Some of them are important pests of crops either causing direct injury or transmitting diseases. The most important pests are: ***Piesma quadratum*** which transmits the virus causing "crinkle" of sugar beet; ***Piesma maculata*** causing considerable damage to sugar beet specially to seedlings; ***Piesma cinerea*** which transmits the virus which causes "savory disease" to sugar beet (Jones and Jones, 1964; Varis, 1973; Ege and Onat, 1982; Yıldırım and Özbek, 1990). On the other hand, ***Piesma salsolae*** appeared promising for biological control of weeds (Goeden, 1973).

Piesma maculatum (Laporte de Castelnau, 1833)

Zosmenus maculatus Laporte de Castelnau, 1833. Mag. de. Zol., 2: 49.

Syn.: ***Zosmenus antica*** Steph., 1829
Zosmenus laportei Fieb., 1844
Zosmenus viridis Jak., 1871 (after Heiss and Pericart, 1983).

General distribution:

Widely distributed. Caucasia, Central Asia, China, Europe, Japan, Mongolia, Russia, Siberia, South Africa and Turkey (Stichel, 1957; Kerzhner and Yachewski, 1964; Popov, 1973; Varis, 1973; Heiss and Pericart, 1983; Lodos, 1986).

Distribution in Turkey:

Erzurum (Oltu) (Ege and Onat, 1982).

Material examined:

Specimens collected from Bartın (Ulus), Çankırı (Şabanözü), Erzurum (Oltu), Kastamonu (Taşköprü), Samsun (Gelemen). A total of 45 specimens.

Occurrence:

Common.

Biological notes:

Specimens were collected from end of March to last week of June mainly from sugar beet and ***Chenopodium*** spp. Few specimens were collected from trees, their presence in trees may be accidental.

This species lives in humid areas such as marshes and river banks and found in road sides and uncultivated areas. Adults overwinter in litter, crevices, plant debris and under stones (Heiss and Pericart, 1983).

In Turkey as well as in other parts of the world ***P. maculatum*** was reported to cause a considerable damage to sprouts of sugar beets. Nymphs and adults feed on both sides of leaves as well as on petioles forming yellowish circular patches then the leaves curved, deformed and dried out resulting in low yield. However, no transmission of pathogenic agents has been attributed to ***P. maculatum*** (Varis, 1973; Ege and Onat, 1982; Yıldırım and Özbek, 1990). In addition, it was reported that ***P. maculatum*** also attacks a number of medicinal plants in Bulgaria (Popov, 1973); also found in ***Chenopodium*** spp., ***Herniaria glabra*** and ***Verbascum*** spp. (Stichel, 1957).

Piesma quadratum (Fieber, 1844)

Zosmenus quadratus Fieber, 1844. Entomol. Monog.: 31, pl. II, fig. 7.

Syn.: ***Acanthia? clavicornis*** F., 1775.

Zosmenus dilatatus Jak., 1874.

Zosmenus convexicollis Jak., 1874.

Piesma chiniana Drake and Maa, 1953.

Piesma suaedae Wagn., 1954.

Piesma spergulariae Woodr., 1966 (after Heiss and Pericart, 1983).

General distribution:

Algeria, Austria, Central Asia, China, Corsica, Czechoslovakia, Denmark, Finland, France, Germany, Holand, Hungary, Irland, Italy, Norway, Poland, Portugal, Romania, Russia, Siberia, Spain, Sweden, Switzerland, Tunisia, Turkey, United Kingdom, Yugoslavia (Stichel, 1957; Southwood and Leston, 1959; Kerzhner and Yachewski, 1964; Lodos, 1986).

Distribution in Turkey:

Çanakkale (Gökçeada) (Heiss and Pericart, 1983).

Material examined:

Specimen collected from Çanakkale (Gökçeada). One specimen.

Occurrence:

Very rare.

Biological notes:

Specimen was collected at the end of May.

P. quadratum inhibits saline soils and lives on Chenopodiaceae: ***Chenopodium, Atriplex, Salicornia, Suaeda, Salsola, Obione*** and on some Cruciferae such as ***Brassica, Raphanus, Sinapis*** and ***Thlaspi,*** also on ***Herniaria*** spp. and ***Aster tripolium.*** In addition, it attacks cultures of sugar beets and fodder beets. It was reported to transmit the virus causing "Crinkle" disease of sugar beets (Stichel, 1957; Southwood and Leston, 1959; Schmutterer and Erhardt, 1963, 1964, 1965; Schmutterer, 1980).

It was also reported that ***P. quadratum*** transmitts a rickettsia like organism which is the causal agent of Latent rosette (Witches' broom) disease of sugar beet (***Beta vulgaris***) and spinach (***Spinacia oleracea***) (Neinhaus and Schmutterer, 1976; Schmutterer, 1980).

Piesma silenes (Horvath, 1888)

Zosmenus silenes Horvath, 1888. **Rev. d'Ent.,** 7: 176.

Syn.: ***Piesma tesquorum*** Kirit., 1954 (after Heiss and Pericart, 1983).

General distribution:

Austria, Bulgaria, Czechoslovakia, Eastern Kazakhstan, France, Germany, Hungary, Italy, Russia, Turkey, Yugoslavia (Hoberlandt, 1955; Stichel, 1957; Kerzhner and Yachewski, 1964; Heiss and Pericart, 1983).

Distribution in Turkey:

Ankara (Hasanoğlan) (Hoberlandt, 1955).

Material examined:

Specimens collected from Erzurum. A total of 3 specimens.

Occurrence:

Very rare.

Biological notes:

Specimens were collected at the end of May. These adults were observed flying at dusk high above areas of wild fruit trees at an altitude of 1.000 m (Hoberlandt, 1955).

P. silenes lives in sandy, xerothermic and sometimes saline areas developing on Caryophyllaceae (Heiss and Pericart, 1983), and on ***Vaccaria parviflora*** (Stichel, 1957).

Piesma salsolae (Becker, 1867)

Zosmenus salsolae Becker, 1867. **Bull. Soc. Nat. Moscou, 40** (1): 113.

Syn.: ***Piesma variable*** sensu Hsiao and Jing, 1979 (after Heiss and Pericart, 1983).

General distribution:

Armenia, Austria, Bulgaria, Central Asia, Czechoslovakia, Denmark, Egypt, Finland, France, Germany, Greece, Greenland, Hungary, Italy, Kazakhstan, Pakistan, Romania, Russia, Siberia, Spain, Turkey (Stichel, 1957; Kerzhner and Yachewski, 1964; Goeden, 1973; Heiss and Pericart, 1983).

Distribution in Turkey:

Afyon (Köroğlu Passage), Ankara, Çankırı, Eskişehir (Sivrihisar), Izmir (Bornova), Kayseri (Pınarbaşı, Yeşilhisar), Kırıkkale (Keskin), Kırşehir (Mucur), Nevşehir (Gülşehir), Niğde (Ulukışla), Samsun (Hoberlandt, 1955; Heiss and Pericart, 1983).

Material examined:

Specimens collected from Afyon (Köroğlu Passage), Ankara, Çankırı, Eskişehir (Sivrihisar), İzmir (Bornova), Kayseri (Pınarbaşı, Yeşilhisar), Kırıkkale (Keskin), Kırşehir (Mucur), Nevşehir (Gülşehir), Niğde (Ulukışla), Samsun. Total of 50 specimens.

Occurrence:

Common and found in large numbers.

Biological notes:

Most specimens were collected from ***Salsola*** sp., others were collected by sweeping net during flight. Specimens were collected at the end of April, May and August.

P. salsolae inhibits saline soils of sea shores as well as banks of some rivers. It feeds on ***Salsola kali*** (Stichel, 1957), and other species of ***Salsola. P. salsolae*** was collected from Turkey to control the weeds ***Salsola iberica, S. kali*** and ***S. tragus*** in California and it appears promising as a biological weed control agent (Goeden, 1973).

Piesma kolenatii (Fieber, 1861)

Zosmenus kolenatii Fieber, 1861. **Die europäischen Hemiptera:** 116-117.

Syn.: ***Piesma caucasicum*** Pericart, 1973 (after Heiss and Pericart, 1983).

General distribution:

Central Asia, around Caspian Sea, Greece, Romania, South Russia, Transcaucasia, Turkey (Hoberlandt, 1955; Stichel, 1957; Kerzhner and Yachewski, 1964; Heiss and Pericart, 1983).

Distribution in Turkey:

Aksaray (Linnavuori, 1965), Kars (Göle, Sarıkamış) (Hoberlandt, 1955).

Material examined:

Specimens collected from Ağrı (Doğubeyazıt), Bitlis (Nemrut Mountain), Kars (Göle, Sarıkamış), Kayseri (Bünyan), Van. A total of 46 specimens.

Occurrence:

Common.

Biological notes:

Specimens were collected from mid of July to mid of August. Some individuals were swept from halophytes in a salt steppe (Linnavuori, 1965). It feeds on ***Suaeda, Chenopodium, Atriplex tataricum, A. hortensis, Symphytum caucasium, Echinospermum barbatum, Dahlianum*** spp. (Stichel, 1957).

Piesma capitatum (Wolff, 1804)

Acanthia capitata Wolff, 1804. **Fasc. quartus,** p. 131.

Syn.: ***Tingis collaris*** Zett., 1828.

Tingis pedicularis H.-S., 1830.

Zosmenus stephensi Fieb., 1844.

Piesma pallidum C., 1862 (after Heiss and Pericart, 1983).

General distribution:

Algeria, Austria, Belgium, Bulgaria, Caucasia, Central Asia, China, Denmark, Finland, France, Egypt, Germany, Greece, Holand, Hungary, Italy, Korea, Morocco, Norway, Poland, Portugal, Romania, Russia, Siberia, Southwest France, Spain, Switzerland, Transcaucasia, Tunisia, Turkey, Yugoslavia (Hoberlandt, 1955; Stichel, 1957; Kerzhner and Yachewski, 1964; Heiss and Pericart, 1983).

Distribution in Turkey:

Afyon, Ankara, Kars (Centrum, Merdenik), Kocaeli (Mollafeneri) (Hoberlandt, 1955; Heiss and Pericart, 1983).

Material examined:

Specimen collected from Aydın (Germencik). One specimen.

Occurrence:

Very rare.

Biological notes:

This single specimen was collected in August. This species prefers humid places and inhibits uncultivated areas and found in edges of fields and road sides. It feeds primarily on Chenopodiaceae, ***Spergula*** sp., ***Stachys italica, Verbascum*** spp. (Stichel, 1957).

Özet

Türkiye Piesmatidae (Heteroptera) faunasına ait ilk liste ve türlerin yayılışlarıyla önemleri hakkında bazı notlar

Bu çalışmada Türkiye'de Piesmatidae familyasına ait saptanmış 6 tür ele alınmıştır. Bunlar: ***Piesma maculatum*** (Lap.), ***P. quadratum*** (Fieb.), ***P. silenes*** (Horv.), ***P. salsolae*** (Beck.), ***P. kolenatii*** (Fieb.) ve ***P. capitatum*** (Wolff). Bu çalışmada söz konusu türlerin sinonimleri, yayılışları, konukçuları, kışlama yerleri ve ekonomik önemleri kısaca ele alınmıştır.

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