

## Some Artheneinae from Turkey (Hemiptera: Lygaeidae)

Neşe ÇAĞATAY (AYSEV)\*

### Summary

In the present study, the male genital organs of Artheneis alutacea Fb., Artheneis balcanica Korm., Holcocranum saturejae Klt. were examined. The brief description of the body and distributions of them were also added. Any detailed study of the male genitalia of these species has not been appeared in the reviewed literature. So in the given work pygophore, paramere and phallus which imply very important taxonomic characters, were described. All the specimens found in Turkey were also added to the diagnostic key to make it more extensive. Besides, Holcocranum saturejae Klt. found to be new record for Turkey.

### Introduction

Artheneinae is a small subfamily of Lygaeidae. It includes only five species found in Turkey (Hoberlandt, 1955; Lodos et al., 1978). Teutates sculpturatus from India, Artheneis foveolata, Polychisme ferruginosus and Northocromus maoricus from the U.S.A., Dilompus robustus from New Zealand were studied (Chopra, 1980; Ashlock, 1957; Slater, 1962, 1986; Malipatil, 1977). In the present study the male genitalia, pygophore, paramere and phallus of Artheneis alutacea Fb., Artheneis balcanica Korm. and Holcocranum saturejae Klt. were examined and their taxonomic importance was shown. General morphology and distribution of them in Turkey were given with the key for the species of Artheneinae recorded from Turkey.

### Material and Method

Specimens in the collection of Entomology Department of Agricultural Faculty, Ege University and in the collection of Zoology Department of Science Faculty, Hacettepe University, contain the material of this work.

The method shown in the former studies done by the author was applied for the preparation of the genital structure and drawings.

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\* Hacettepe University, Faculty of Science, Department of Biology, Beytepe, Ankara

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## Key to Genera and Species of Artheneinae

1. Eyes extremely small, pronotum has a median split distally, rostellar plates gradually descending ..... gen. Artheneis Spin. .... 2
- Eyes normal, pronotum has no median, rostellar plates very short has only distal parts developed ..... gen. Holcocranum Fb.  
Body white-grey with brown pores; hypophysis distally widens apically  
cut, processus gonopori has 5-6 turns, seconder gonopore becomes narrow (Fig. 3)  
..... H. saturejae Kol. .... 3
2. Scutellum with a raised area wedge shaped and transversally placed, corium extends to distal of 3rd paratergite ..... A. foveolata Spin. .... 3
- Scutellum with raised area in form of two elliptical hardness at sides ..... 3
3. Raised area like two elliptical hardnesses quite long, touching distally; paramere apically blunt; processus gonopori has one turn, seconder gonopore slightly flaring (Fig. 2) ..... A. balcanica (Korm.) .... 4
- Elliptical hardnesses small, proximally situated, and not touching at all ..... 4
4. Rostrum reaches as far as second coxa; corium pointed at distal corner ..... A. hircanica Klt. .... 4
- Rostrum hardly passes fore coxa; corium rounded at distal corner; hypophysis apically pointed processus gonopori has about 1 turn, secondary gonopore not flaring (Fig. 1) ..... A. alutacea Fb. .... 4

### Artheneis Spinola, 1837

#### Artheneis alutacea Fieber, 1861

General coloration light yellow-brown with brown pores; head yellow-brown; 3rd antennal segment 0.7 times as long as the 2nd one; pronotum yellow-brown, proximally blackish; scutellum light yellow or light yellow-brown, has two corn shaped white-yellowish raised area at sides proximally situated; corium widely rounded at the distal corner, extends more or less to the middle of 3rd paratergite; rostrum yellowish, distally brown or darkbrown, hardly passes fore coxa and can not reaches to the 2nd; 2.4-2.7 mm in length.

Pygophore convex at the dorso-distal surface and slightly descended at the lateral surfaces; dorso-lateral process round and curved inward; lateral margins of the anterior genital chamber have two processes also curved inward, more or less "V" shaped at the base (Fig. 1 A); hypophysis looks like a dominant part of the paramere, flat, thick, curved and pointed apically; prominent tongue like inner process pointed and directed toward the hypophyses, seems as a second block; a slight roundness at the place of outer process (Fig. 1 B, C); theca, strongly pigmented at lateral faces and characterized with the acute lateral processes directed inward; spine shaped projections located under them (Fig. 1 D); conjunctivae very short, with a pair of sclerotized lobes, basally round and apically pointed, lateral to the ejaculatory reservoir; ejaculatory reservoir well developed, neck fused with the body; vesica is tube like and without helicoid process; gonoporal process short and has about one turn; secondary gonopore non-flaring (Fig. 1 E).

Material examined: İzmir (Üdemiş), 25.4.1977, 1 male 2 females; Muğla (Dalaman), 4.5.1972; Balıkesir (Tahirova), 12.6.1970, 5 males 4 females; Denizli, 13.6.1983, 2 males 3 females; Çanakkale (Gelibolu), 22.7.1983, 1 male.

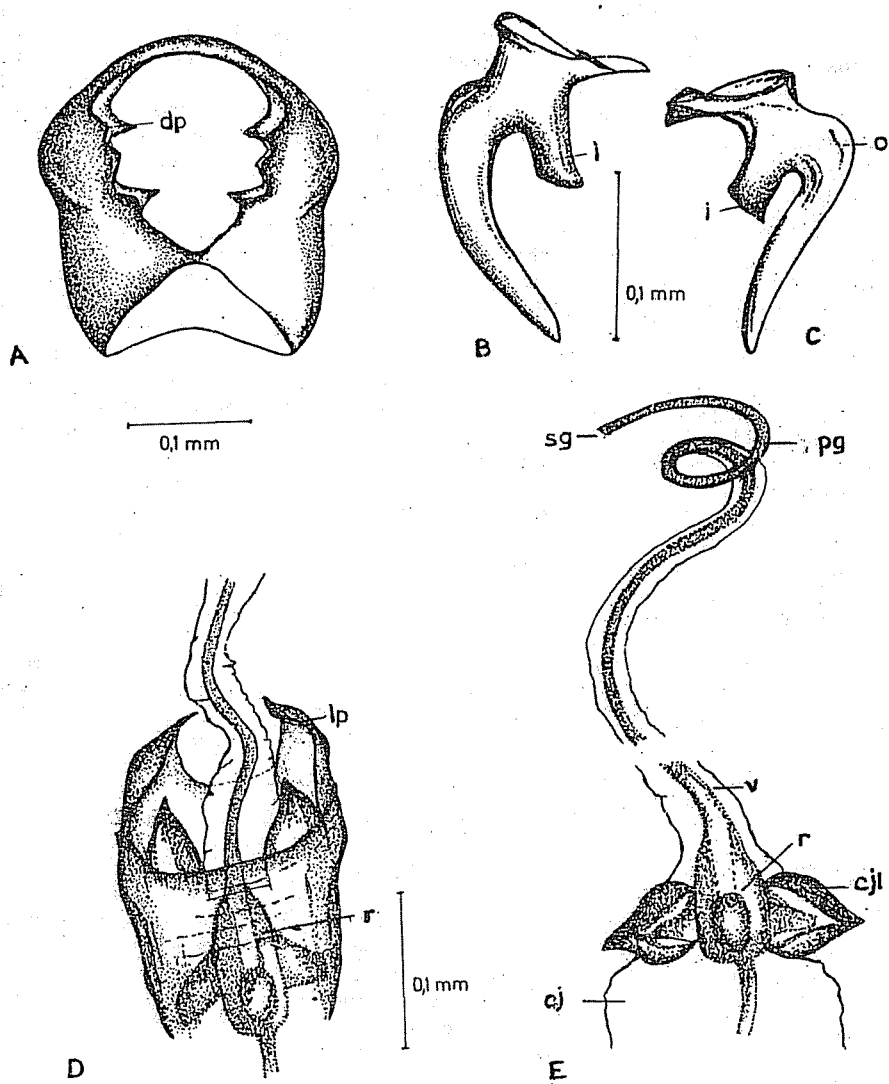


Fig. 1. *Artheneis alutacea* Fb. A- Pygophore, B, C- Paramere, D- Thecae, E- Endosoma. Abbreviations: dp-dorso-lateral process, i-inner process, o-outer process, lp-lateral process, r-ejaculatory reservoir, cj-conjunctivae, v-vesicae, pg-processes gonopori, sg-second gonopore, cjl-sclerotized conjunctival lobe.

Artheneis balcanica Kormilev, 1938

General coloration light yellow-brown; head brown 2nd antennal segment 1.4-1.5 times as long as 3rd, and 1.1-1.15 times as long as 4th segment; pronotum light yellow-brown, distally reddish-yellow and proximally dark brown; scutellum proximally light yellow-brown, distally dark brown and has two long, elliptical, yellowish, raised areas almost touching distally; corium rounded at the distal corner, extends to the middle of 3rd parasternite; membrane colourless; rostrum grey-brown, distally black and extends to the fore-coxae; 3.4-3.9 mm in length.

Dorso-distal surface of the pygophore slightly concave at the medial part, convex at the lateral corners; dorso lateral processes distally arch shaped more than cut, anterior genital opening "U" shaped, widens toward the upper part, has pointed projections curved inward the capsule (Fig. 2 A, B); hypophyses of the paramere short, flat and apically blunt; body has a quite thick and finger like outer process and slightly round inner process (Fig. 2 C, D); phallosome strongly pigmented; lateral processes strange shaped, like a curving narrow projections pointed distally; under these, theca has unpigmented part more or less round; ventral face strongly pigmented, except medial narrow band and rectangular proximal part has wavy edges (Fig. 2 E); conjunctiva very short, has a pair of ventral sclerotized broad lobes lateral to the reservoir dome shaped dorsally strongly pointed inward and outward; ejaculatory reservoir well developed; vesica like a thin tube; gonoporal process has about one turn; seconder gonopore slightly flaring (Fig. 2 F).

Material examined: Balıkesir (Tahirova), 12.6.1970, 1 male 2 females; İzmir (Bakırçay), 15.5.1973, 3 males; (Bergama), 15.5.1973, 3 males; (Bornova), 3.6.1980, 2 males, 1 female; Afyon, 7.5.1973, 4 males; (Abide), 7.5.1973, 5 males, 3 females.

Holcocranum Fieber, 1860

Holcocranum saturajae Kolenati, 1845

General coloration light grey-whitish; head has two brown splits; 3rd antennal segment 0.6 times as long as 2nd segment, 4th segment is as long as 2nd one; pronotum is laterally bordered with a narrow whitish edge and distally has two brown spots; scutellum dark brown, has two straight yellow lines; corium brownish with light yellow veins; membrane colourless; rostrum yellow-brown and reaches little further than fore coxae; 2.8-3.5 mm in length.

Pygophore prominently convex at the distal surface; dorso-lateral processes slightly arched distally, anterior genital opening is round (Fig. 2 A), hypophysis of paramere thin, widened at the distal part and cut at the end; inner process, big pointed projection, looks like a main body division; outer process comparatively smaller and round, spine like small process directed upward to the basal of the hypophysis (Fig. 2 B, C); theca with lateral processes curved inward, and moderately pigmented at lateral faces; conjunctiva very short, with sclerotized lobes adjacent to the wings of reservoir and a pair of membranous lobes; reservoir well developed has neck fused with the

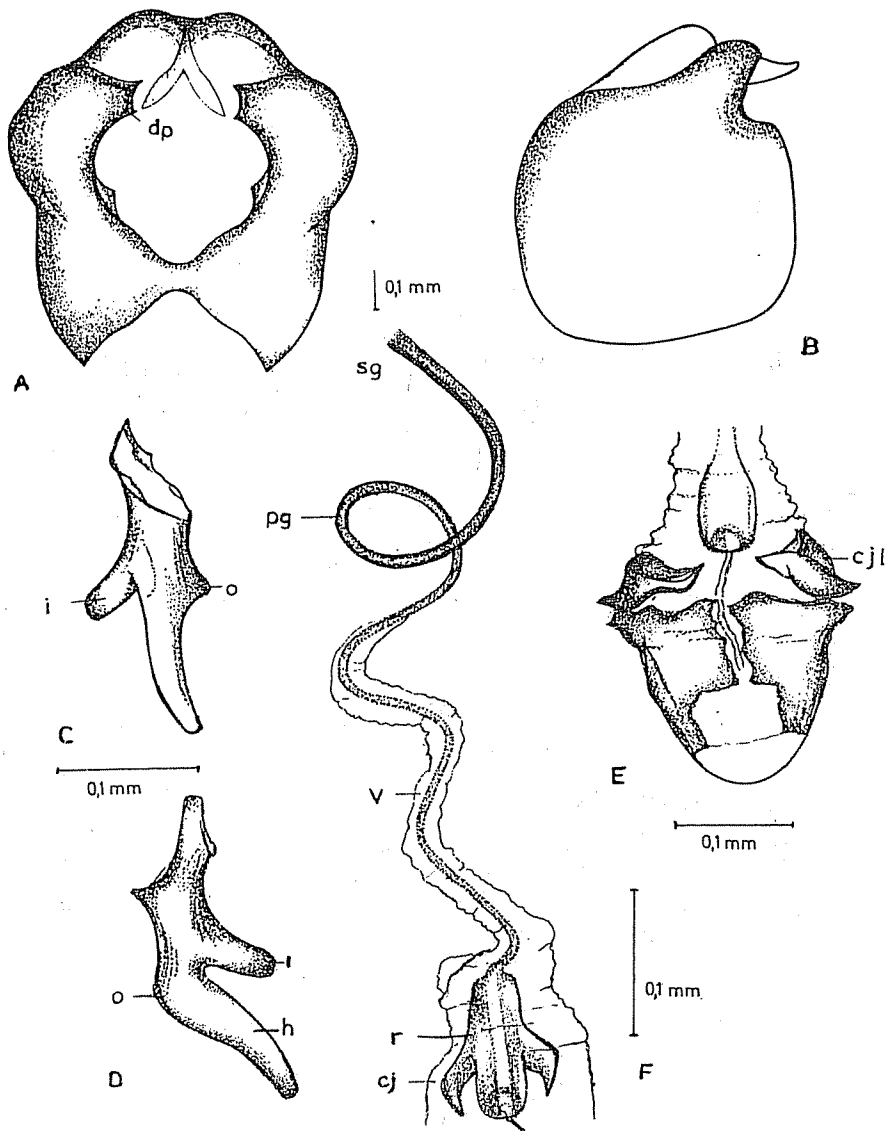


Fig. 2. *Artheneis balcanica* Korm. A- Pygophore (dorsal), B- Pygophore (lateral), C, D- Paramere, E- Thecae, F- Endosoma. Abbreviations: dp-dorso-lateral process, i-inner process, o-outer process, r-ejaculatory reservoir, cj-conjunctivae, v-vesicae, pg-processus gonopori, sg-secondar gonopore, cjl-sclerotized conjunctival lobe, h-hypophyses.

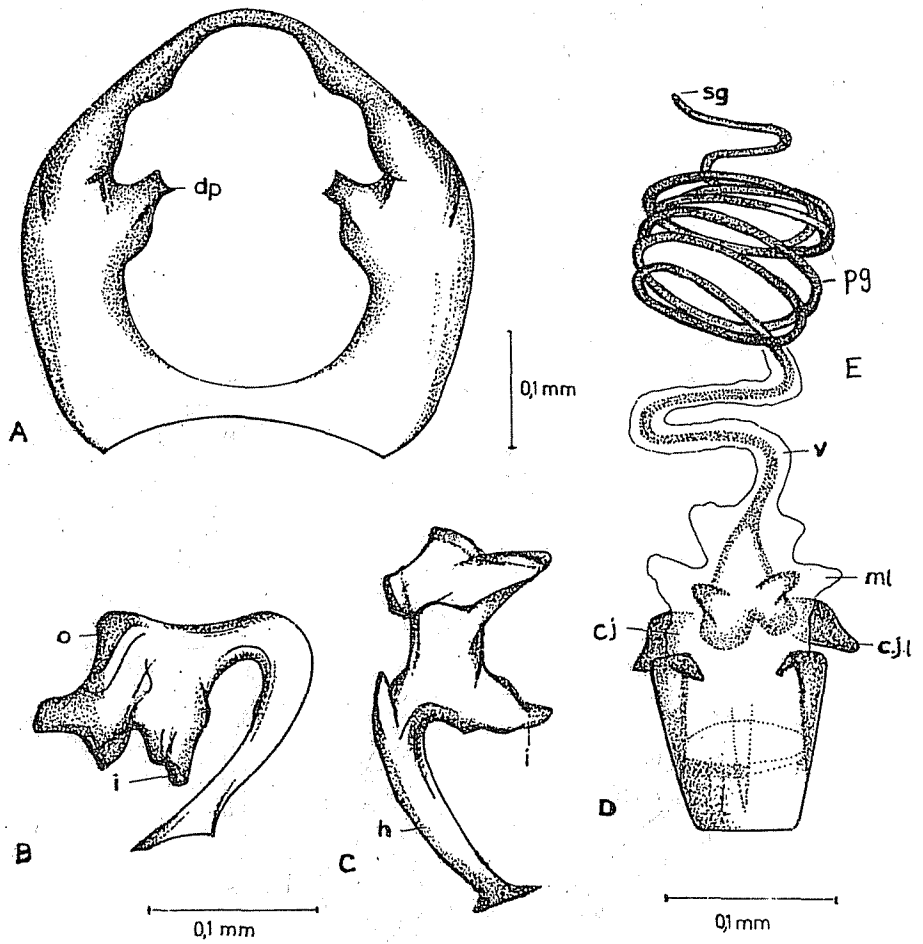


Fig. 3. *Holcocranum saturejae* Kol. A- Pygophore, B, C- Paramere, D- Phallothecae, E- Endosoma. Abbreviations: dp-dorso-lateral process, i-inner process, o-outer process, h-hypophysis, sg-seconder gonopore, pg-processus gonopori, cj-conjunctivae, cjl-sclerotized conjunctival lobe, ml-membran lobe, v-vesica.

body; tube like vesica without helicoid process; gonoporal process long and coiled with 5-6 turns; secondary gonopore non-flaring.

Material examined: İzmir (Doğanköy), 5 males, 4 females.

### Conclusion

A. balcanicum and A. hyrcanica are very much similar with their body shape, colour and size. Prominant difference among them is the lenght of rostrum and the size and shape of raised area on scutellum. In spite of this big resemblance, we can say that external genital structure, pygophore, paramere and phallus, have diagnostic differences. Pygophore resembles in general, but the shape of dorso-distal surface, dorso-lateral processes and anterior genital opening show differences. The fore process and tip of the hypophysis of the parameres are varied in A. hyrcanica and A. balcanicum. But the parts of the paramere in H. saturejae are extremely different in shape from those of Artheneis species. Fore process, spine like third process and distal part of the hypophys has peculiar distinctive characters. Theca is also differs by the shape of pigmentation in A. balcanicum, A. hyrcanica and A. foveolata examined before (Ashlock, 1957). The basic character shered by them in the thecae, is existing of the prominent lateral processes. Processus gonopori is short and has about one turn in the genus Artheneis while H. saturejae having 5-6 turns. Chopra (1980) had found the same result in T. sculpturatus: The shape of secondary gonophore is also different in species; as it is shown in this work and the other ones (Ashlock, 1957; Malipatil, 1977). We can conclude that, large lateral process of the theca, very short conjunctivae and pair of sclerotized lobes on it lateral to the ejaculatory reservoir, well developed reservoir has neck fused with the body, any helicoid process on vesica might imply the diagnostic characters of the subfamily Artheneinae.

### Özet

Türkiye'den bazı Artheneinae türleri (Hemiptera:Lygaeidae)

Artheneinae altfamilyası türlerinin ele alındığı bu çalışmada Artheneis alutacea Fb., Artheneis balcanica Korm., Holcocranum saturejae Klt. türlerinin tanımları, erkek genital organı yani pygophore, phallus ve paramerlerinin morfolojisi ve taksonomik önemi ile yayılışlarının saptanması amaçlanmıştır. Bu türlerin genital organ tarifleri mevcut literatüre göre ilk kez bu araştırma ile ortaya konmuştur. Ayrıca Türkiye'de daha önce bulunmuş türler de işlerlik kazanabilmesi için tanı anahtarına ilave edilmiştir. Holcocranum saturejea Klt.'nin de Türkiye için yeni kayıt olduğu belirlenmiştir.

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