

**A revision of the genus *Picromerus* Amyot and
Serville (Hemiptera : Pentatomidae : Pentatominae : Asopini)
from western Palaearctic with description
of two new species from Turkey**

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Summary

The asopine genus *Picromerus* Amyot and Serville of the subfamily Pentatominae of Pentatomidae is revised from western Palaearctic and redescribed along with its three known species viz *bidens* (Linn.), *conformis* (H.Sch.) and *nigridens* (Fabr.) with description of two new species from different areas of Turkey with reference to metathoracic scent complex male and female genitalia. The included taxa are keyed.

Introduction

The predacious asopine stinkbug genus *Picromerus* Amyot and Serville was little known with reference to male and female genitalia until recently Gapud (1981) in his unpublished Ph.D. thesis and Rana and Ahmad (1988) redescribed the genus and *P.orientalis* Rishi and Abbasi respectively in this regard. The western Palaearctic species viz *P.bidens* (Linn.), *P.conformis* (H.Sch.) and *P.nigridens* (Fabr.), however remained unknown in the above characters with descriptions and keys to them mostly restricted to colour characters in the literature to date (Hoberlandt 1955, Stichel 1960-62, Puchkov 1965, Lodos et al. 1978 and Lodos and Önder 1983).

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Presently therefore Picromerus is redescribed with its three known species viz bidens, conformis and nigridens from western Palaearctic alongwith description of two new species i.e. brachypterus and pseudo-bidens from various parts of Turkey with special reference to metathoracic scent complex and genitalia. The included species are compared with their closest allies, with a key given to separated them.

A series of specimens, in the collection of the Department of Entomology, Faculty of Agriculture, University of Ege, Izmir, from different parts of Turkey were examined. For the dissection of male genitalia specially for the inflation of aedeagus the techniques of the first author (1986) was followed. For the dissection of the female genitalia including spermatheca and for descriptions, measurements and illustrations the conventional procedures specially those used by Ahmad and Rana (1988) and Rana and Ahmad (1988) were generally followed. The length of pronotum is counted from anterior angle to medio-posterior point giving the maximum length but in parentheses length along median line is also given for finding the total length of the body. In the interocellar distance the diametres of the ocelli is also included. All the holotypes and paratypes are deposited in the above collection. The measurements are given in millimetres.

Picromerus Amyot and Serville

Picromerus Amyot and Serville 1843. Hist. Nat. Hemipt. : 84.

Cimex (sub) Cimex Stal 1867. Ofv.k.Svensk.vet. Akad. Förh., 25 (7): 497. Cimex (inpart) Kirkaldy 1909. Cat. Hemipt. 1 : 4.

Dark gray with pale and black markings and pigments, with reddish tinge; abovate, weakly convex above, usually slightly less than 2 x as long as broad. Head as long as or slightly longer than broad; antecocular distance equal to or longer than remainder of head; paraclypei usually subequal to clypeus, lateral margins sometimes weakly reflexed, sinuate in front of eyes; antennae with basal segment not reaching apex of head, 2nd-5th more or less subequal; labium moderately thickened, almost reaching to hind coxae. Pronotum slightly deflected anteriorly and posteriorly, anterior margin slightly broader than width of head across eyes, anterolateral margins moderately sinuate and strongly crenulate, humeri produced outward into short or obtuse spines; scutellum subequal to or longer than broad at base, sometimes with faint basal gibbositities; hemelytra sometimes brachypterous exposing terminal part of abdomen; metathoracic scent complex with moderately developed peritreme and evaporatoria; forefemora and foretibiae usually with acute or obtuse spine or tubercle. Abdomen longer than broad, usually with a short and obtuse tubercle at base of 2nd segment; connexiva usually exposed; ventroposterior margin of 7th abdominal sternum medially deeply concave with lateral angles round or acute.

Male genitalia : Pygophore about as long as broad, ventroposterior margin medially V-shaped or notched; paramere "F"-shaped, inner lobe thumb-like with blade much longer than stem, gradually tapering into

acute and sometimes curved apex; inflated aedeagus with well developed median dorsal membranous conjunctival appendage, apically slightly bilobed, pair of dorso-lateral conjunctival appendages, apically semisclerotized, thecal shield well developed (detailed illustrations given by Rana and Ahmad 1988).

Female genitalia : First gonocoxae as exposed usually broader than long; 9th paratergites usually reaching beyond posterior margin of 8th, posteriorly usually lobe-like; 8th appearing longer and broader than 9th; triangulin, arcus and 2nd gonocoxae medially exposed and moderately sclerotized; spermatheca with somewhat oval bulb, well developed pump region and median dilation as illustrated by Rana and Ahmad (1988).

Comparative note : Picromerus appears closely related to Andrallus Bergroth but the latter has more elongate abdomen and humeral spines much more pronounced.

Type species : Picromerus bidens (Linn.).

Key to the western Palaearctic species

1. Base of scutellum without pale callosities, entire 1st, 2nd and basal 1/2 of last 3 antennal segments reddish, apical 1/2 of latter black P.nigridens (Fabr.)
- Base of scutellum with pale callosities, antennae not as above 2
2. Antennae almost entirely reddish 3
- Antennae usually largely black with some palish portions P.conformis (H.Sch.)
3. Hemelytra somewhat brachypterous exposing atleast distal portion of abdomen, 2nd antennal segment remarkably longer, atleast 1 1/4 x length of 3rd P.brachypterus sp.n.
- Hemelytra not brachypterous, not exposing and distinct part of abdomen, 2nd antennal not as above 4
4. Membrane of hemelytra distinctly reaching beyond posterior margin of abdomen, 2nd antennal segment usually distinctly shorter than 4th P.pseudobidens sp.n.
- Membrane of hemelytra just reaching posterior margin of abdomen, 2nd antennal segment usually subequal to 4th P.bidens (Linn.)

Picromerus bidens (Linn.)

Cimex bidens Linnaeus, 1758. Syst. Nat. ed. X : 443.

Colouration : Body pigmented with pale and some black portions; antennae except brownish black distal most portion of apical segment, labium pale reddish; underside and legs pale reddish tinged black; behind each pronotal callosity prominent, in addition to 1-2 faint,

trans versely arranged and on each basal corner and on middle in line and on extreme apical portion of scutellum pale spots present.

General shape : Oval to elongately oval, length slightly less than $1 \frac{3}{4}$ x width across humeri but distinctly more than 2x maximum width of abdomen.

Head : About as long as wide; antecular distance distinctly more than length remainder of head; paraclypei usually as long as or shorter than clypeus, margins in front of eyes distinctly concave, beyond middle parallel sided, convex, apical margin round; 2nd antennal segment distinctly longer but less than $1 \frac{1}{4}$ x length of 3rd, subequal to or slightly shorter than 4th, latter subequal to 5th; labium usually not quite reaching hind coxae; length antecular region 1.4; length remainder of head 1.2; width 2.5-2.6; interocular distance 1.7; interocellar distance 1.2; length antennal segments : I 0.3-0.4, II 1.7-1.9, III 1.45-1.7, IV 1.8-1.95, V 1.8; length labial segments : I 1.2-1.3, II 1.4-1.8, III 1.1-1.3, IV 1.1-1.2.

Thorax and abdomen : Pronotum distinctly less than $\frac{1}{2}$ as long as wide, anteriorly and posteriorly at sides deflected, humeri prominently depressed at base, apices projected into short, acute spine, posteriorly margin near base of spine slightly conically projected giving spine very slight bifid appearance, lateral margins beyond humeri anteriorly sinuate; length 3.6-3.8 (3.0-3.3), width 8.0-8.2; scutellum about as long as or distinctly longer than broad (in ♀) length 3.9-4.8, width 3.9-4.0; metathoracic ostiolar peritreme with posterior margin near ostiole only slightly slanting posteriorly, anterior margin near ostiole usually convex at least to a short distance following concavity; membrane of hemelytra just reaching posterior margin of abdomen; posterior margin of 7th ♀ abdominal sternum sinuately concave with sides subround; length apex scutellum-apex abdomen (including membrane) 2.7-3.4. Total length ♂ 11.7-12.2, ♀ 12.4-14.1.

Male genitalia : Pygophore (fig.1) with venroposterior margin only markedly reflexed near middle, sides broadly round; paramere with apex of blade projected and inwardly curved (fig. 4).

Female genitalia : Ninth paratergites slightly reaching beyond posterior margin of 8th; posterior margin of 1st gonocoxae at sides sinuate; 2nd gonocoxae with truncate posterior margin; arcus with posterior margin concave (fig.7).

Comparative note : This species could easily be separated from its closest ally P. pseudobidens with membrane of hemelytra just reaching posterior margin of abdomen by other characters noted in the descriptions and key.

Material examined : 1 ♂ Biga, 12.6.1970, Armut, det. by Seidenstücker; 1 ♀ Çorum : İskilip, 6.8.1979, Rubus, det. by F.Önder; 3 ♂ 5 ♀, Ankara : Çubuk; Çorum : İskilip; Türkgeldi; Nevşehir : Ürgüp; Gölcük : Ödemiş, 29.30.6, 31-7, 6.15-8, 1972, 77, 79, 87; Kavak (Populus sp.) Rubus, y.ot (weeds), Galium, Onopordon.

Picromerus brachypterus sp.n.

Colouration : Body densely pigmented with some pale and black portions; antennae (except brownish black distal most portion of apical segment) and labium pale reddish; legs and underside pale, reddish tinged black; behind each pronotal callosity a small subround, on each basal corner and on extreme apical portion of scutellum faint to bright pale spots present.

General shape : Elongately oval, length usually subequal to $1 \frac{3}{4}$ x width across humeri and distinctly less than 2x maximum width of abdomen.

Head : Usually slightly wider or width subequal to length; antecular distance usually subequal to length remainder of head; paraclypei usually as long as or slightly shorter than clypeus, margins in front of eyes faintly concave, beyond middle slightly convex, apices subround; 2nd antennal segment at least $1 \frac{1}{4}$ x or about $1 \frac{1}{3}$ x length 3rd, and usually distinctly longer than 4th, latter usually equal to 5th; labium distinctly reaching to hind coxae; length antecular region 1.3-1.35; length remainder of head 1.3-1.35; width 2.65-2.8; interocular distance 1.65-1.8; interocellar distance 1.25-1.4; length antennal segments : I 0.35-0.4, II 1.95-2.05, III 1.4-1.6, IV 1.8-1.95, V 1.8-1.85; length labial segments : I 1.35-1.45, II 1.8-1.85, III 1.3-1.35, IV 1.2.

Thorax and abdomen : Pronotum at least slightly less than $\frac{1}{2}$ as long as wide, anteriorly and posteriorly deflected, humeri prominently depressed at base, apices projected into short, acute spine, posteriorly margin near base of spine slightly conically projected giving spine very slight bifid appearance, lateral margins beyond humeri anteriorly markedly sinuate; length 3.8-3.9 (3.1-3.4), width 8.0-8.6; scutellum distinctly longer than broad (in ♀); length 4.6-4.9, width 4.0-4.3; metathoracic ostiolar peritreme with posterior margin near ostiole markedly slanting posteriorly, anterior margin faintly oblique following deep concavity, giving strongly curved, lunate appearance with apex usually strongly antero-laterally directed; membrane of hemelytra not reaching posterior margin of abdomen, exposing terminal portion; posterior margin of 7th abdominal sternum sinuately concave with sides round; apex scutellum-apex abdomen (including exposed lobe-like 9th paratergites) 3.75-4.0. Total length ♀ 14.15-14.95.

Male : Not available.

Female genitalia : Ninth paratergites slightly reaching beyond posterior margin of 8th; 1st gonocoxae with posterior margin at sides convex; 2nd gonocoxae medially with slightly concave posterior margin; arcus with faintly concave posterior margin (fig. 8).

Comparative note : This species appears isolated in having brachypterous hemelytra exposing distal portion of abdomen and for many other apomorphies listed in the key and descriptions.

Material examined : Holotype ♀ Kaçkar D., 22.8.1973, Fraxinus, Paratypes 2 ♀, same data as above.

Picromerus conformis (H.Sch.)

Cimex conformis H. Sch. 1841. Wanz. Ins. 6 : 72.

Picromerus confusus Joak. 1909. Sbornik Nar. Umot. Sofia, 25 : 7.

Colouration : Body heavily pigmented with pale and black portions and occasionally with reddish tinge; antennae mostly black except inner side of 2nd, middle (patch more toward proximal) of 3rd and a little basal portions of 4th and 5th pale; labium pale (except brownish black apical segment); legs dark (except coxae, trochanters, inner side of femora, middle of tibiae and bases of tarsi pale); underside pale with black pigments and patches; each basal corner, central in line and a little apical portion of scutellum pale.

General shape : Elongately oval, length only slightly less than 2x width across humeri and distinctly more than 2x maximum width of abdomen.

Head : Usually slightly wider (σ) or width subequal to length (\varnothing); antecular distance subequal to length remainder of head; paraclypei usually as long as or slightly shorter (\varnothing) than clypeus; margins in front of eyes markedly concave, beyond middle markedly convex and faintly reflexed, apices subround; 2nd antennal segment subequal to 3rd, usually distinctly shorter than 4th, latter subequal to 5th; labium usually reaching to hind coxae; length antecular region 1.1-1.3; length remainder of head 1.1-1.3; width 2.35-2.6; interocular distance 1.4-1.7; interocellar distance 1.2-1.4; length antennal segments : I 0.35, II 1.4-1.55, III 1.4-1.5, IV 1.5-1.7, V 1.5-1.65; length labial segments : I 1.0-1.1, II 1.4-1.8, III 1.1-1.4, IV 1.0-1.2.

Thorax and abdomen : Pronotum at least slightly more than 1/2 as long as wide, anteriorly and posteriorly at sides deflected, humeri slightly curved at base, apices tuberculate, not bifid in appearance, lateral margins beyond humeri anteriorly slightly sinuate to substraight; length 3.3-4.1 (2.7-3.3), width 6.2-7.8; scutellum subequal to (σ) or distinctly longer than broad (\varnothing) : length 3.7-5.1, width 3.7-4.1; metathoracic ostiolar peritreme with anterior and posterior margins near ostioles slightly slanting posteriorly, outer margin oblique with apex usually pointed; membrane of hemelytra reaching much beyond posterior margin of abdomen; posterior margin of 7th abdominal sternum slightly sinuately concave with sides subacute; apex scutellum-apex membrane 3.4-4.2; apex scutellum-apex abdomen 2.9-3.0. Total length σ 12.1-12.6, \varnothing 15.0-15.3.

Male genitalia : Pygophore with ventroposterior margin only slightly reflexed medially, usually v-shaped, sides concave (fig.2); paramere with apex of blade not prominently projected and only slightly curved (fig. 5).

Female genitalia : Ninth paratergites not or only slightly reaching beyond posterior margin of 8th; posterior margin of 1st gonocoxae at

sides subround; 2nd gonocoxae with convex posterior margin; arcus with posterior margin subtruncate (fig. 9).

Comparative note : It appears entirely isolated in the group of western Palaearctic species with predominantly black antennal segments without reddish tinge.

Variations : Three females from Gördes, Edirne and Kurtboğazi have remarkably prominent clypeus, projected in front of paraclypei and their 2nd antennal segment is also at least slightly longer than 3rd. We have found occasional females also showing prominent clypeus in *P. bidens* and the 2nd antennal segment is not sufficiently different to warrant the description of a new species specially in the absence of any male specimen showing clearcut differences.

Material examined : 1 ♂ Çorum : İskilip; 5.8.1979, *Crataegus*, det. by F. Önder; 1 ♀ Edirne,, 4.7.1972, wild grass, det. by Seidenstücker, 2 ♂ 3 ♀ İskilip, Tire, Gördes, Kurtboğazi, 12-20.7.1977, 79, on meşe (*Quercus* sp.) kestane (*Castanea* sp.) and on above dates and plants.

Picromerus nigridens (Fabr.)

Cimex nigridens Fabricius, 1803. *Syst. Rhyng* : 156.

Lodos and Önder (1983) have stated that only Fieber (in Lodos and Önder) recorded this species from Turkey without giving any specific location and all the other authors just relied upon his record. In the absence of any material we here rely on the detailed key given by Stichel (op.cit.) and Lodos and Önder (op. cit.).

Picromerus pseudobidens sp.n.

Colouration : Body pigmented with some pale, black portions; antennae (except brownish black distal most portion of last), labium pale reddish; underside and legs pale, reddish with some black portions and pigments; behind each pronotal callosity (having metallic sheen) in addition to one adjacent to each in line, scutellum in addition to one, each at basal corner in middle in line and apical margin with pale spots.

General shape : Ovate to elongately oval, length slightly less than $1 \frac{3}{4} x$ (slightly more than in ♀) width across humeri but distinctly more than 2x maximum width of abdomen.

Head : About as long as wide (wider in ♀) antecular distance distinctly longer (sometimes $1 \frac{1}{4} x$) than length remainder of head; paraclypei usually as long as or slightly longer than clypeus with a trend of enclosing it at corners, margins in front of eyes slightly concave, beyond middle convex, apical margin slantingly round; 2nd antennal segment usually slightly longer than or subequal to 3rd, usually longer than 5th; labium usually just reaching anterior margins of hind coxae; length antecular region 1.4; length remainder of head 1.0-1.1; width

2.55-2.6; interocular distance 1.6-1.7; interocellar distance 1.2-1.3; length antennal segments : I 0.35, II 1.6-1.7, III 1.5-1.6, IV 1.75-1.95, V 1.6-1.9; length of labial segments : I 1.3; II 1.75-1.8, III 1.2-1.3, IV 1.1-1.2.

Thorax and abdomen : Pronotum distinctly less than 1/2 as wide as long, anteriorly and posteriorly at sides deflected, humeri depressed at base, apices projected into short acute spine, posterior margin near base of spine usually slightly roundly projected, lateral margins beyond humeri anteriorly slightly sinuate; length 3.2-3.7 (2.8-3.3), width 7.6-7.8; scutellum usually at least slightly longer than broad; length 3.6-4.4, width 3.4-3.9; metathoracic ostiolar peritreme with posterior margin near ostiole usually sharply slanting angulately posteriorly, anterior margin near ostiole usually concave; membrane of hemelytra reaching beyond posterior margin of abdomen; posterior margin of 7th abdominal sternum medially sinuately concave with sides round; apex scutellum-apex membrane 3.2-3.6; apex scutellum-apex abdomen 2.6-3.3. Total length ♂ 12.0-12.6, ♀ 13.7-15.1

Male genitalia : Pygophore with ventroposterior margin markedly reflexed at sides, corners narrowly round (fig. 3); paramere with apex of blade projected finger-like (fig. 6).

Female genitalia : Ninth paratergites hardly reaching beyond posterior margin of 8th, posterior margin of 1st gonocoxae at sides round; 2nd gonocoxae with convex posterior margin; arcus with substraight posterior margin (fig. 10).

Comparative note : This species could easily be separated from its closest ally P. bidens by its longer membrane of hemelytra passing distinctly beyond posterior margin of abdomen and usually distinctly longer 4th antennal segment than 2nd.

In the collection from Kaçkar D., collected on 22.8.1973 from Fraxinus, we have 1 ♂ having long hemelytra, reaching distinctly beyond posterior margin of abdomen with much smaller 3rd and 4th antennal segments than 2nd and ventroposterior margin of pygophore sinuate. Owing to lack of a series we could not evaluate these differences for the time being and contend to consider them aberrant variation.

Material examined : Holotype ♂ Ürgüp, 15.8.1979, On Galium. Paratypes 4♂ 2♀ Şebinkarahisar, Kaçkar D., Pınarhisar, Tekirdağ, Ankara (Çubuk, Beynam), 21-29-6, 1, 12, 23-7, 21-8, 1972, 78, 79, 81 and 87, on Crataegus, Kavak (Populus sp.), Böğürtlen (Rubus sp.) and Fraxinus.

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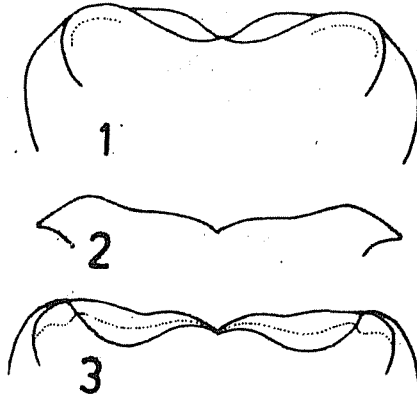
Özet

Batı Palearktik Bölgesinin Picromerus A.-S. (Hem. : Pentatomidae : Pentatominae : Asopini) türlerinin revizyonu ve Türkiye'den iki yeni türün deskripsiyonu

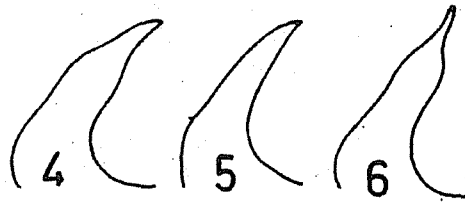
Bu çalışmada Picromerus A.-S.'un Batı Palearktik Bölgedeki türlerinin revizyonu yapılmıştır. Revizyonda P. bidens (Linn.), P. conformis (H.Sch.) ve P. nigridens (Fabr.) isimli bilinen türlerin redeskripsiyonları ve Türkiye'den iki yeni türün (P. pseudobidens sp.n., P. brachyotus sp.n.) orijinal deskripsiyonlarıyla incelenen türlerin teşhis anahtarı verilmiştir.

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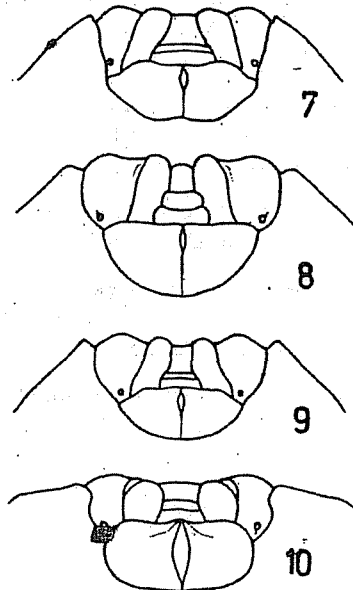
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Figs. 1-3. Terminal portion of pygophore, dorsal view; 1. P. bidens; 2. P. conformis; 3. P. pseudobidens



Figs. 4-6. Paramere, inner view; 4. P. bidens; 5. P. conformis; 6. P. pseudobidens



Figs. 7-10. Female terminalia, ventral view; 7. P. bidens; 8. P. brachypterus; 9. P. conformis; 10. P. pseudobidens