

***Brachynema purpureomarginatum kerzhneri* n. ssp.**  
from Iran (Hemiptera: Heteroptera: Pentatomidae),  
with a key to the «Rassenkreis»

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### Abstract

*Brachynema purpureomarginatum kerzhneri* n. ssp. is described from Iran and some previous records of *Brachynema hypocrita* Puton, 1887 are synonymized with it. An identification key to the four subspecies of the «Rassenkreis» is proposed. The new taxon can be separated, among other characters of external morphology, by the small size of the basal callosities of the scutellum. In the female genitalia, it has been observed that one of the processes of the seminal capsule of the spermatheca is always attached to it.

**Key words:** Heteroptera, Pentatomidae, *Brachynema purpureomarginatum kerzhneri* n. ssp., Iran, identification key.

### Resumen

***Brachynema purpureomarginatum kerzhneri* n. ssp. de Irán (Hemiptera: Heteroptera: Pentatomidae), y clave de identificación para el «Rassenkreis»**

Se describe *Brachynema purpureomarginatum kerzhneri* n. ssp., de Irán, y se sinonimizan con ella algunos registros previos de *Brachynema hypocrita* Puton, 1887. Se propone una clave de identificación de las cuatro subespecies del «Rassenkreis». El nuevo taxón se diferencia, entre otros caracteres de morfología externa, por el pequeño tamaño de las callosidades basales del escutelo. En la genitalia femenina se ha observado que uno de los procesos de la cápsula seminal de la espermateca está siempre adherido a ella.

**Palabras clave:** Heteroptera, Pentatomidae, *Brachynema purpureomarginatum kerzhneri* n. ssp., Irán, clave de identificación.

### Laburpena

***Brachynema purpureomarginatum kerzhneri* n. ssp., Irangoa (Hemiptera: Heteroptera: Pentatomidae), eta «Rassenkreis»aren identifikazio-klabea**

*Brachynema purpureomarginatum kerzhneri* n. ssp., Irangoa, deskribatzen da eta *Brachynema hypocritaren* Puton, 1887 aurretiko zenbait aipu sinonimizatzen dira harekin. «Rassenkreis» honen lau subespezieentzako identifikazio-klabea proposatzen da. Kanpo-morfologiaren beste ezaugarri batzuek gain, eskuteloaren oinarriko eremu kailukaren tamaina txikiak bereizten du taxon berria. Emeen genitalian, espermatekaren kapsula seminalaren luzakinetako bat beti kapsulari itsatsita dagoela behatu da.

**Gako-hitzak:** Heteroptera, Pentatomidae, *Brachynema purpureomarginatum kerzhneri* n. ssp., Iran, identifikazio-klabea.

## Introduction

The genus *Brachynema* (Pentatomidae: Pentatominae: Carpocorini) is composed of four Palearctic species: *cinctum* (Fabricius, 1775), *germarii* (Kolenati, 1846), *purpureomarginatum* (Rambur, 1839) and *signatum* Jakovlev, 1879 (J. Ribes and Schmitz, 1992; Rider, 2006). It is a typically Mediterranean genus of big-sized «green bugs» which, as far as known, is mainly linked to Chenopodiaceae and other halophilous plants. It was revised by J. Ribes and Schmitz (1992).

*B. purpureomarginatum* can be considered a «Rassenkreis», with three subspecies recognized until now: *hypocrita* Puton, 1887 (Fig. 1a), which is a Maghrebin element recorded in Morocco, Algeria, and Tunisia, *purpureomarginatum* (Rambur, 1839) (Fig. 1b), with a restricted west-Mediterranean distribution along France, Portugal and Spain, and *triguttatum* Fieber, 1870 (Fig. 1c), only found in the southeastern Iberian Peninsula, Spain (J. Ribes and Schmitz, 1992; Rider, 2006).

Examining some Iranian material supplied for study by I.M. Kerzhner (ZMAS, St. Petersburg) during the preparation of the corresponding volume of «Faune de France», the senior author (J.R.) has detected a fourth subspecific taxon of *B. purpureomarginatum*. Previously recorded from that country (Oshanin, 1912; Hoberlandt, 1997) as *Brachynema hypocrita* Puton, 1876, it is now described as new and the corresponding synonymies proposed as follows.

## Results

### *Brachynema purpureomarginatum kerzhneri* n. ssp.

= *Brachynema hypocrita* (non Puton, 1887): Oshanin, 1912: 14, n. syn.

= *Brachynema hypocrita* (non Puton, 1887): Hoberlandt, 1997: 258, n. syn.

#### Type material:

Holotype: 1 ♀ (ZMAS); paratypes: 1 ♂ (coll. Museu de Ciències Naturals, Barcelona), 1 ♂ (coll. J. Ribes), 1 ♂ (coll. Pagola-Zabalegui). All of them with two white labels: the first one [printed] (transcription from the Cyrillic alphabet): «sz Seistan, Neizar, V. Persiya /

Zarudny [leg.] IX98 [= September 1898]» (in the specimen deposited in the coll. Pagola-Zabalegui there is a «13» handwritten before the data «IX89»); the second one: «*Brachynema / hypocrita* Put. [handwritten] / Oshanin det. [printed]».

The holotype carries the abdomen, in two pieces, fixed to an additional card, and the spermathecal complex embedded in DMHF in a further one. The holotype, with the following red label [handwritten]: «HOLOTYPUS / *Brachynema / purpureomarginatum / kerzhneri* n. ssp. / J. Ribes & S. Pagola-Carte 2007».

The paratype deposited in the Museu de Ciències Naturals de Barcelona also carries an additional card including the pygophore (fixed) and the parameres and phallus (embedded in DMHF). Each of the paratypes, with the following red label [handwritten]: «PARATYPUS / *Brachynema / purpureomarginatum / kerzhneri* n. ssp. / J. Ribes & S. Pagola-Carte 2007».

Some additional specimens are deposited in the ZMAS. Since we have not studied them, they are not included in the type series.

#### Description:

Length: male = 9.7–10.0 mm; female = 10.5 mm.

Glabrous, quite shiny body (Fig. 1d). Punctuation concolor, very dense but not very marked. Dorsal coloration green; antero-lateral margins of pronotum and anterior third of exocoria yellow or reddish. Antennae dark green to blackish, sometimes with joints I and II paler. One black spot before each of the humeral angles of pronotum. Anterior margin of scutellum bearing a small callosity in the middle (0.25–0.30 mm x 0.20–0.25 mm) and a pair of much smaller, even unnoticeable ones on both sides (0.10 mm x 0.15 mm) (Fig. 2d); all those callosities white; apex largely yellow. Posterior angle of each paratergite with an elongate, black spot (length = 0.15 mm), being smaller than the rounded spot of each parasternite (diameter = 0.15 mm). Ventrally green, sometimes with coarsely delimited yellowish or pinkish areas.

Head 1.17–1.24 times wider than length, depressed and sloping anteriorly. Clypeus included by the jugae, which are somewhat flanged and strongly concaves. Ocular index = 3.30–3.81. Antennae thin. I–II–III–IV–V = 0.7–1.25–0.70–1.05–1.15 mm (average). Bucculae narrow. Rostrum reaching the mesocoxae.

Mesosternum bearing, on its middle, a longitudinal groove. Metasternum with the peritreme short, clearly raised, auricular; evaporatory area matt, quadrangular, joining a wide strip, also matt, on the posterior

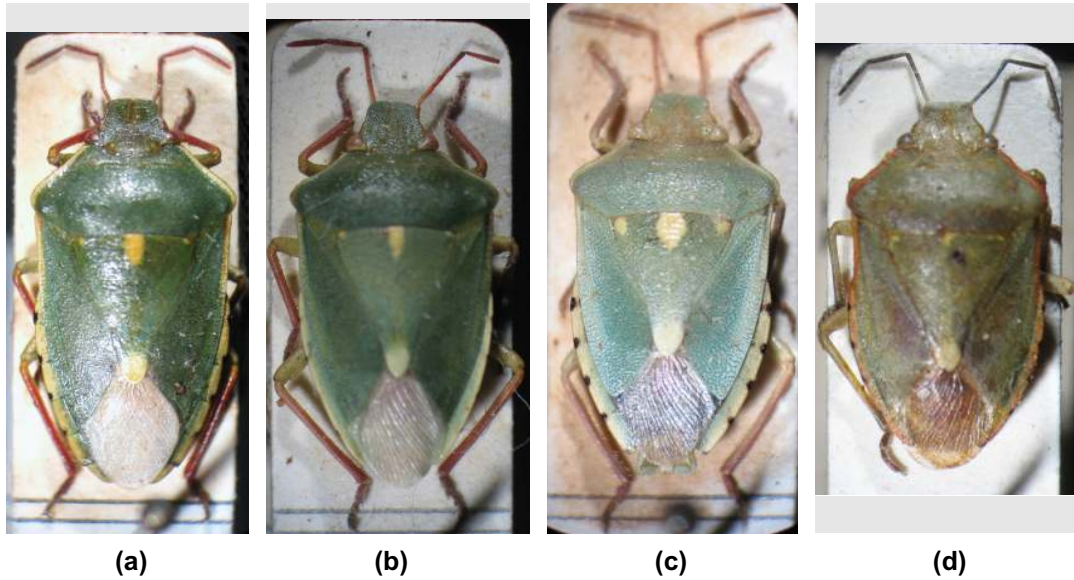


FIGURE 1. Habitus of: (a) *Brachynema purpureomarginatum hypocrita* Puton, 1887; (b) *B. p. purpureomarginatum* (Rambur, 1839); (c) *B. p. triguttatum* Fieber, 1870; (d) *B. p. kerzhneri* n. ssp.

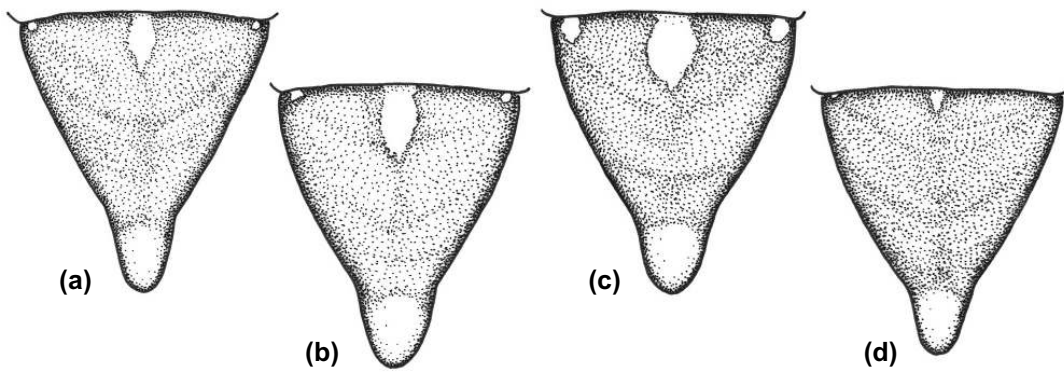


FIGURE 2. Scutellum of: (a) *Brachynema purpureomarginatum hypocrita* Puton, 1887; (b) *B. p. purpureomarginatum* (Rambur, 1839); (c) *B. p. triguttatum* Fieber, 1870; (d) *B. p. kerzhneri* n. ssp.

margin of the mesosternum; both areas bearing a coarse and scattered punctuation. Pygophore as in the other subspecies of *B. purpureomarginatum*.

Legs quite short. Posterior tarsi: I–II–III = 0.55–0.30–0.50 mm.

Male genitalia. Phallus and parameres (Fig. 3) as in the other subspecies of *B. purpureomarginatum*.

Female genitalia. Seminal capsule of the spermatheca widened, conical at the base and rounded at the

apex, bearing a pair of subapical, opposite processi, one of them stout, finger-shaped and not reaching the distal flange of the spermathecal pump, the other lobiform and attached to the capsule (Fig. 4d). In addition, the same structure is below described for the other three subspecies:

*B. p. hypocrita*. Female genitalia. Seminal capsule of the spermatheca globose or subglobose, bearing a pair of stout, opposite, horn-shaped processi, one of them sometimes bi- or triforked, the other one sometimes directed in a

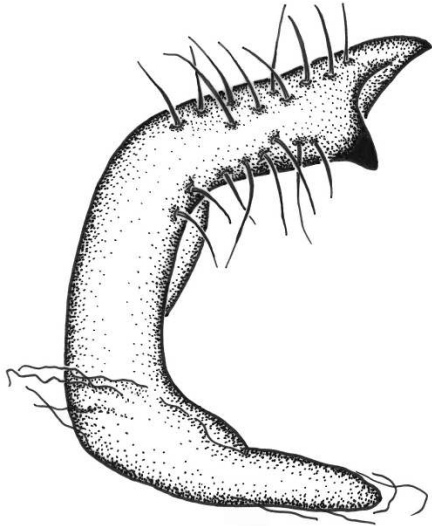


FIGURE 3. Paramere (male genitalia) of *Brachynema purpureomarginatum kerzhneri* n. ssp.

contrary sense, one of both slightly reaching or exceeding the distal flange of the spermathecal pump (Fig. 4a).

*B. p. purpureomarginatum*. Female genitalia. Seminal capsule of the spermatheca basally widened, bearing a pair of apical, opposite, horn-shaped processi, one of them almost always simple, reaching or slightly exceeding the distal flange of the spermathecal pump, the other one very variable, bi- or triforked. Sometimes there is an additional apical processus, also horn-shaped, more or less developed (Fig. 4b).

*B. p. triguttatum*. Female genitalia. Seminal capsule of the spermatheca globose, bearing a pair of subapical, opposite, horn-shaped processi, one of them exceeding the distal flange of the spermathecal pump, the other one generally biforked (Fig. 4c).

#### Derivatio nominis:

*B. p. kerzhneri* n. ssp. is named for Izyaslav M. Kerzhner (St. Petersburg), always willing to help and discuss about our questions.

#### Discussion:

*B. p. kerzhneri* n. ssp. can be easily separated from the remaining taxa of the «Rassenkreis» by the cal-

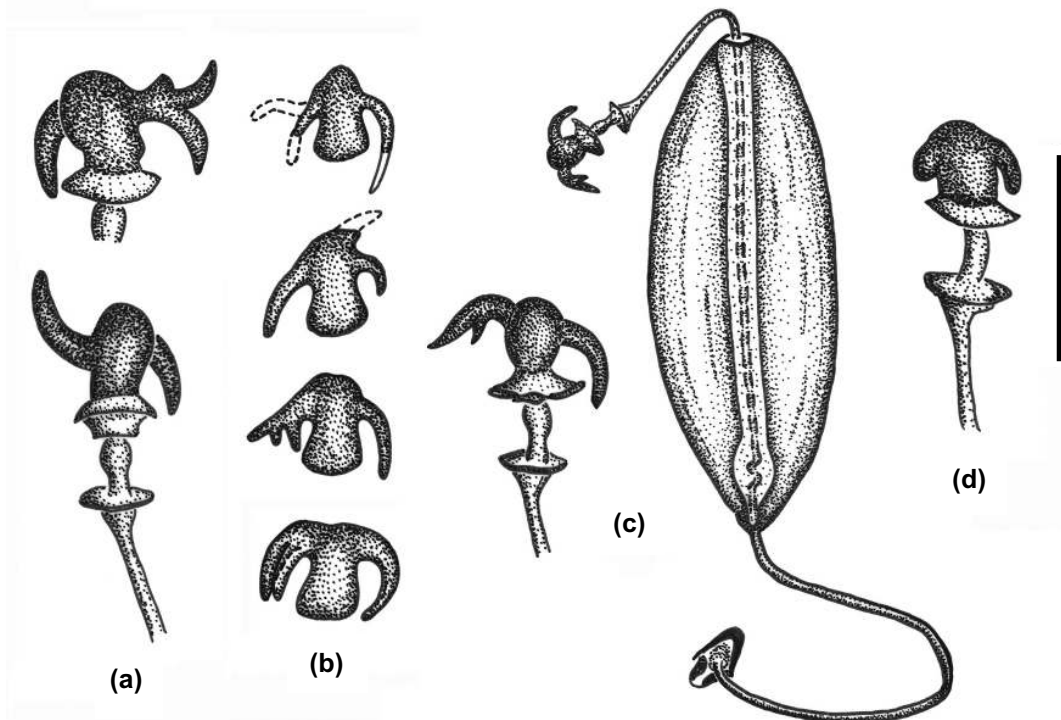


FIGURE 4. Spermatheca (female genitalia) of: (a) *Brachynema purpureomarginatum hypocrita* Puton, 1887, variability in two specimens; (b) *B. p. purpureomarginatum* (Rambur, 1839), variability in several specimens (redrawn after J. Ribes and Schmitz, 1992); (c) *B. p. triguttatum* Fieber, 1870; (d) *B. p. kerzhneri* n. ssp. (Scale bar = 0.5 mm).

losities of the anterior margin of the scutellum (Figs. 2a-d), particularly by the middle callosity, which is under 0.30 mm long, in contrast to the other subspecies, in which it is 0.70–1.10 mm long. Lateral callosities (0.10 mm x 0.15 mm or even unnoticeables) distinguish it from *B. p. triguttatum*. The presence of a black spot at the humeral angles sets the new subspecies apart from both *B. p. purpureomarginatum* and *B. p. triguttatum*. The smaller size of the spots of paratergites separates it from *B. p. triguttatum*.

The shape and arrangement of the processi of the seminal capsule of the spermatheca is extremely variable within any single subspecies (see, for example, Fig. 4b for *B. p. purpureomarginatum*). Even when the description of such structures has been provided above in a comparative way, we think that it is very difficult to sort the countless combinations into distinct groups in order to separate them (J. Ribes and

Schmitz, 1992; and Figs. 4a-d). Nevertheless, only in *B. p. kerzhneri* n. ssp. has been observed that one processus is wholly attached to the capsule (Fig. 4d, in contrast to Figs. 4a-c).

In a small number of *B. cinctum* specimens, traces of the basal callosities of the scutellum are weakly noticeable, although they never reach the size of those in *B. p. kerzhneri* n. ssp. In addition, the black spots at the posterior angles of the parasternites are roughly similar to those of the parasternites in *B. cinctum*, whereas in *B. p. kerzhneri* n. ssp. the ventral spots are greater. Finally, the seminal capsule of the spermatheca is also highly variable in *B. cinctum*, bearing or lacking short lateral processi, which are never finger- or horn-shaped. In contrast, the seminal capsule of *B. p. kerzhneri* n. ssp. shows one finger-shaped processus whereas in the other three subspecies it always bears two opposite horn-shaped processi, which may even be bi- or trifurcate.

**Key to the subspecies of *Brachynema purpureomarginatum***

- 1 (2) Pale callosities at the basal angles of the scutellum, large (0.40–0.45 mm x 0.30 mm) (Fig. 2c) . . . . .  
 . . . . . *B. purpureomarginatum triguttatum* Fieber, 1870  
 [Pale callosity in the middle of the basis of the scutellum, large (0.90–1.00 mm x 0.60 mm) (Fig. 2c).  
 Black spots at the posterior angles of the paratergites, large (0.25–0.30 mm x 0.20–0.15 mm).  
 Humeral angles of the pronotum without black spots]
- 2 (1) Pale callosities at the basal angles of the scutellum, small, generally under 0.20 mm, rarely reaching 0.35 mm
- 3 (4) Black spots at the posterior angles of the paratergites, large, extending to about 1/3 of the segment length (0.30 mm x 0.20 mm), narrow and elongate or punctiform . . . . .  
 . . . . . *B. purpureomarginatum hypocrita* Puton, 1887  
 [Pale callosity in the middle of the basis of the scutellum, large (0.70–0.90 mm x 0.40–0.50 mm). Pale callosities at the basal angles of the scutellum, small (0.10–0.20 mm, even vestigial or lacking) (Fig. 2a).  
 Humeral angles of the pronotum with a black spot]
- 4 (3) Black spots at the posterior angles of the paratergites, smaller (1/6 or less of the segment length)
- 5 (6) Pale callosity in the middle of the basis of the scutellum, large, longitudinally elongated, irregular (1.00–1.10 mm x 0.50–0.60 mm) (Fig. 2b). Humeral angles of the pronotum only rarely bearing (4% of the specimens) a black spot . . . . . *B. purpureomarginatum purpureomarginatum* (Rambur, 1839)  
 [Pale callosities at the basal angles of the scutellum, small (0.15 mm, rarely 0.35 mm) (Fig. 2b). Black spots at the posterior angles of the paratergites, small, elongate (0.20 mm)]
- 6 (5) Pale callosity in the middle of the basis of the scutellum, small (0.25–0.30 mm x 0.20–0.25 mm) (Fig. 2d). Humeral angles of the pronotum with a black spot . . . . . *B. purpureomarginatum kerzhneri* n. ssp.  
 [Pale callosities at the basal angles of the scutellum, very small (0.10–0.20 mm) or even unnoticeable (Fig. 2d). Black spots at the posterior angles of the paratergites, small, elongate (0.15 mm)]

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