

Description of a New Species of *Platyderus* Stephens, 1827 (Coleoptera, Carabidae) from the Iberian Peninsula

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A species of the genus *Platyderus* Stephens, 1827, *Platyderus marianicus* new species, is described from Sierra Madrona (Central Spain). Diagnostic characters for separation from related taxa are provided.

Key words: *Platyderus*, new species, Iberian Peninsula

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INTRODUCTION

The genus *Platyderus* Stephens, 1827 belongs to the Sphodrini Laporte de Castelnau, 1834, Pterostichinae Bonelli, 1810. Currently approximately 100 species are known in the Palaearctic region (Hovorka & Sciaky, 2003), most of which are distributed around the Mediterranean Sea. A total of 55 species have been recorded in the Iberian Peninsula, which makes this area the one with the greatest diversity within the genus on a global level.

An important part of these taxa have been characterised during the last twenty-five years (Anischenko, 2003, 2005; Arribas, 1992; Jeanne, 1985, 1988, 1996; Zaballos, 1990; Campos & Novoa, 2005). Despite that outlined above, the possibility of discovering new species within this

genus continues to be high. Causes that are at the origin of this situation are multiple.

In the first place the complexity of the geological history of the Iberian Peninsula must be taken into consideration, as is the case with its consequences over the relief of the same, characterised by the existence of numerous isolated mountain areas.

In the second place, there is an existence of numerous areas that are susceptible to holding this genus, which have not been systematically sampled, consequence dating from the past of the delay in the studies covering the entomological diversity.

Finally we must consider the particularities involved in the biology of numerous species of

the *Platyderus* genus, which is characterised by its meso-hygrophilus tendency. In arid areas of the peninsular south, this tendency makes its localisation difficult in great measure, reducing its presence on the surface to very short periods, during the autumn and beginning of spring, in general after abundant rainfall. This behaviour, which is associated to species that inhabit the superficial underground compartment (Juberthie *et al.*, 1980) favours important isolation of the populations, which gives rise to the formation of new species in territorial environments that are relatively small.

The new species belongs to the “*ruficollis*” group (Jeanne, 1996), which to date counted with 11 species distributed throughout the Iberian Peninsula (map 1). This group is characterised because it has the middle dorsal pore of the elytra located on the third striae, with smooth or finely dotted striae.

MATERIAL AND METHODS

Dilation of the internal sac of the middle lobe of the aedeagus has been executed in accordance to the method described by Berlov (1992).

Terminology for the description of the structures of the internal sac has been taken from Anitchenko (2005).

In this paper, apart from the type material, specimens of *Platyderus marduk* Anitchenko, 2003 and *Platyderus rotundatus* Chaudoir, 1866 has been used, being such material duly deposited in the collections of the authors.

DESCRIPTION

Platyderus marianicus sp. nov.

Type Material. Holotype: 1 Male. Puerto de Valderrepisa, Sierra Madrona, Ciudad Real, 1100 m; 30.III. 2006, España: Ruiz-Tapiador leg. (coll. Ruiz-Tapiador)

Paratypes: Same data as holotype, 1 Male (coll Anischenko), 2 Females (coll Ruiz-Tapiador) 1 Female (Colección Museo Nacional de Ciencias Naturales, Madrid); idem, 12.III.2007, Ruiz-Tapiador leg. 1 Male (Colección Museo Nacional de Ciencias Naturales, Madrid), 1 Female (Coll J. P. Zaballos, Madrid), 1 Female (coll D. Wrase, Berlin), 1 Male and 2 Females (coll Ruiz-Tapiador)

Length, 7.5-8.5 mm. Upper part of the body chestnut brown, with lighter extremities.

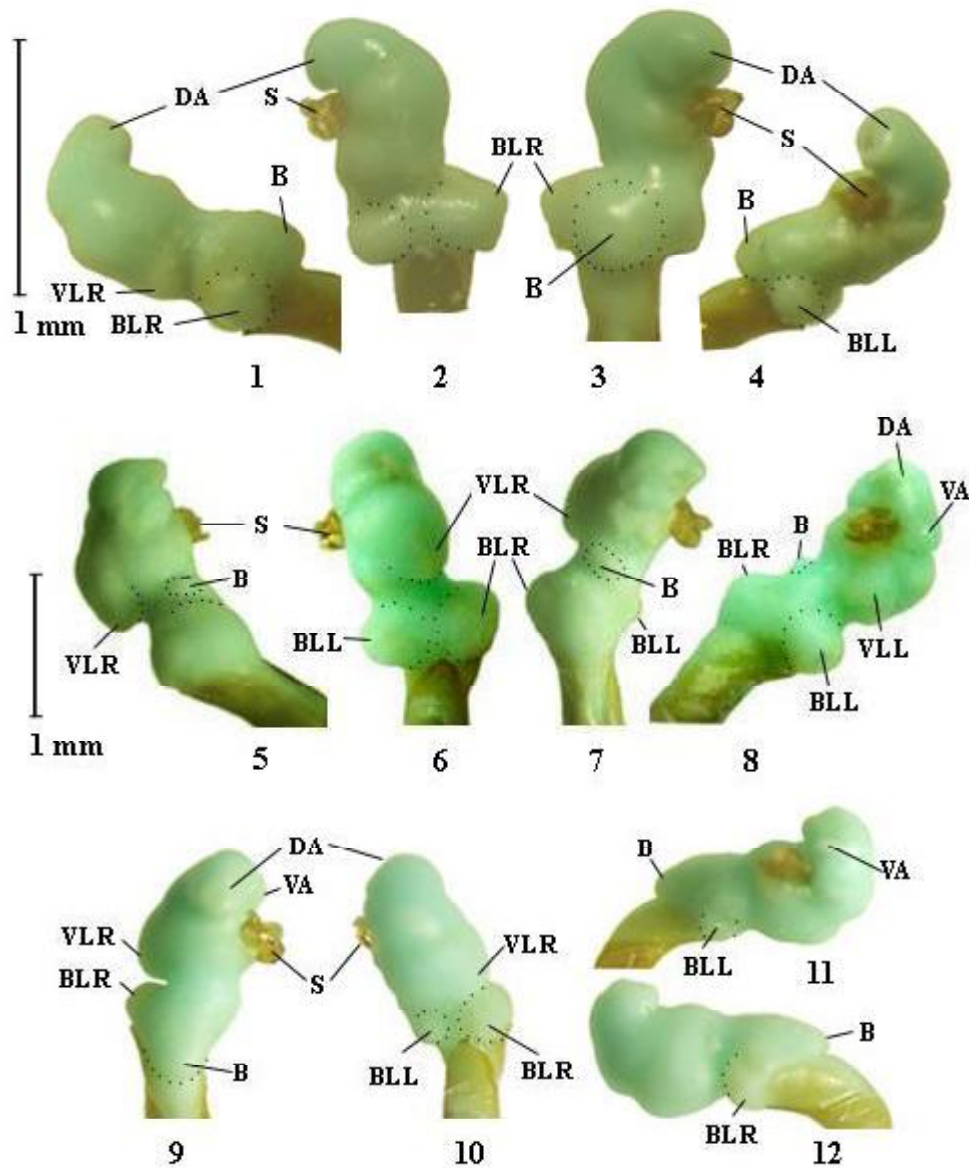
Head rather flat, with isodiametric micro-reticulation on the forehead. Very superficial frontal grooves with an absence of punctating. Eyes moderately prominent.

Pronotum transverse 1,2 times wider than long, widest before middle, brilliant disk, without micro-reticulation, impunctate; proepisterna with micro-reticulation strongly transverse and sparsely punctate. Hind angles rounded; the basal foveae does not reach the rear edge and the lateral sides are convex, with thick punctating. Non-dotted basal surface, slightly rough longitudinally. Basal margin visible. Longitudinal groove very deep.

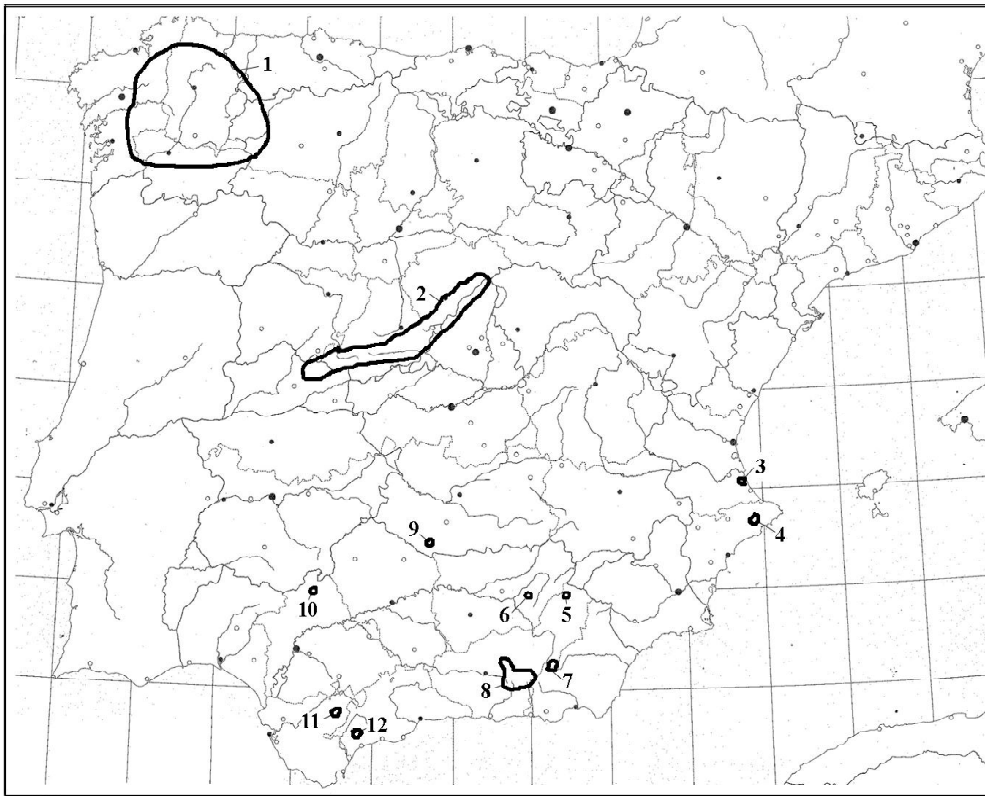
Sub-oval elytron with remarkable scaleform micro-reticulation in both sexes, striae deep and smooth and intervals convex with very fine, sparse, and irregular punctate in front half. Middle dorsal pore located on the third striae.

Structure of the internal middle lobe of the male aedeagus is shown in figures 1-4. It is characterized by a very prominent B protuberance, which contracts with VLR protuberance which is scarcely marked. From a ventral view, BLR and BLL protuberances show a bulky look and a symmetric layout in relation to the aedeagus axis.

Taxonomic considerations. The description of new species in the *Platyderus* genus faces two important difficulties. On the one hand, the extensive number of species that are already known. And on the other hand, their important morphological uniformity. These causes have led to an



Figs. 1-12. Internal sac of the middle lobe of the aedeagus **1-4)** *P. marianicus* sp. nov. (Puerto de Valderrepisa, Sierra Madrona), Holotype; **5-8)** *P. rotundatus* Chaudoir (Sierra Arana); **9-12)** *P. marduk* Anichtchenko (Cazalla de la Sierra). Name of structures of the internal sack (DA: dorsal-apical, VA: ventral-apical, B: basal, DLR: dorsal-lateral right, DLL: dorsal-lateral left, BLR: basal-lateral right, BLL: basal-lateral left and S: sclerite).



Map 1. Geographic distribution of “*ruficollis*” species group for Iberian *Platyderus*. 1) *P. gallaecus* Jeanne, 1970; 2) *P. montanellus* Graells, 1851; 3) *P. valencianus* Anitchenko, 2005; 4) *P. mateui* Anitchenko, 2005; 5) *P. sagrensis* Anitchenko, 2005; 6) *P. migelangeli* Anitchenko, 2005; 7) *P. itziarae* Anitchenko, 2005; 8) *P. rotundatus* Chaudoir, 1866; 9) *P. marianicus* sp. nov.; 10) *P. marduk* Anitchenko, 2003; 11) *P. berlovi* Anitchenko, 2005; 12) *P. toribioi* Anitchenko, 2005.

increasing difficulty in the differentiation of species when using traditional characters as a basis. This problem has already been outlined in other genus of *Carabidae* (Zaballos, 2005), which results in an obligation to search out new elements for differentiation. Use of the three-dimensional structure of the aedeagal internal sac provides a new tool for discrimination, and it may allow a new approach of the phylogenesis.

The only species of the “*ruficollis*” group, which is geographically close to the *P. marianicus* n. sp. is *P. marduk* (Anitchenko,

2003) occurring in the area surrounding Cazalla de la Sierra (Sevilla). This are clearly differentiated from new species because the inter-striations of the elytrons are strongly concave and with thick punctating, apart from the shape of the internal sac (fig. 9–12). The volume of BLR and BLL protuberances show a very bulky look in *P. marianicus*, while they are less developed in *P. marduk*. As far as VLR protuberance is concerned, the rate of development is quite different from the previous one, since it is very small in *P. marianicus* but very well marked in *P. marduk*

Within this group, the species close to *P. marianicus* n. sp. is *P. rotundatus* (Chaudoir, 1866), but can be differentiated from the new species by its impunctate frontal grooves.

Its aspect is very similar, with the most obvious external difference residing in the micro-reticulation. In the case of the *P. rotundatus* this difference is less marked in the females, practically disappearing in the case of the males. In that pertaining to its morphology, in the *P. marianicus* it is pointy, while in the *P. rotundatus* it is blunted. The most pronounced difference can be appreciated again, in the different configuration model of its internal sac, as can be seen in the corresponding figure (fig 4-8). The difference between these two species is found in the rate of development of B and VLR protuberances. B is well developed in *P. marianicus* while VLR is poorly marked. However, B is scarcely developed in *P. rotundatus*, while VLR has developed very well.

As a final conclusion, it can be advanced that a detailed revision of the genus, as of the consideration of this new character, is destined to bring about the discovery of new species, thus forcing a reconsideration of the group's phylogenesis.

Etymology. The origin of this new species's name *P. marianicus* n. sp., refers to the *Marianica Cordillera*, name given by *Estrabon* to the Sierra where the typical series inhabits and which has its origin in the Roman Proconsul by the name of *Mario Sexto* who was in charge of running the mines located in this area.

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