

On some new or little known *Psalitrus* d'Orchymont
from Africa and Asia
(Coleoptera, Hydrophilidae, Sphaeridiinae)

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Abstract

Two new species of *Psalitrus* D'ORCHYMONT are described: *P. durisi*, from Nigeria, and *P. balfouri*, from Sudan. *P. dorchymonti* J. BALFOUR-BROWNE is recorded as new for Nigeria and its female genitalia are figured for the first time. *P. sauteri* D'ORCHYMONT, from Taiwan, is redescribed and both male and female genitalia are figured for the first time.

Résumé

Deux nouvelles espèces de *Psalitrus* D'ORCHYMONT sont décrites: *P. durisi*, du Nigeria et *P. balfouri*, du Soudan. *P. dorchymonti* J. BALFOUR-BROWNE est nouveau pour le Nigeria et ses pièces génitales femelles sont représentées pour la première fois. *P. sauteri* D'ORCHYMONT, de Taïwan, est redécrit et ses genitalia mâle et femelle sont figurés pour la première fois.

During a study on *Psalitrus* D'ORCHYMONT, 1919 from southern India and Sri Lanka, I had the opportunity to study some unidentified *Psalitrus* in The Natural History Museum, London (BMNH) and to examine the type series of one little known species from Taiwan.

Psalitrus D'ORCHYMONT belongs to the tribe *Omicrini* SMETANA, 1975 of the hydrophilid subfamily Sphaeridiinae. Eleven species are known from the Ethiopian and Oriental regions, ten of them reviewed by J. BALFOUR-BROWNE (1948) but many more species are to be described in the future. The genus has been included among *Omicrini* by MALCOLM (1980) and redescribed in detail (MALCOLM, 1981b).

The identification of *Psalitrus* species is mainly based on the aedeagus but I believe the identification might be possible in some cases using biometric characters. Some of these characters are detailed for each species in table I. Good external characters are often not available, the species are therefore very similar each other.

Table 1. Biometric data of *Psalitrus* (in mm). PL: pronotum length, EL: elytral length, BL: total body length, TW: total width, PW: pronotum width, HW: head width, MH: maximum height, TW/BL: circularity ratio, PW/TW: parallelism ratio, MH/BL: convexity ratio, min: minimal value, max: maximal value, \bar{x} : mean, s: standard deviation.

		PL	EL	TW	PW	HW	MH	TW/BL	PW/TW	MH/BL
P. durisi (n=22)	min =	0.25	0.85	0.93	0.82	0.45	0.53	0.76	0.80	0.43
	max =	0.38	1.07	1.18	0.97	0.53	0.78	0.89	0.92	0.59
	\bar{x} =	0.31	0.97	1.05	0.90	0.49	0.69	0.83	0.86	0.54
	s =	0.03	0.05	0.06	0.04	0.02	0.06	0.04	0.03	0.04
P. dorchymonti (n=26)	min =	0.25	0.88	0.88	0.80	0.42	0.57	0.70	0.81	0.45
	max =	0.35	1.05	1.05	0.90	0.50	0.70	0.88	0.98	0.58
	\bar{x} =	0.30	0.94	0.96	0.85	0.47	0.64	0.78	0.89	0.52
	s =	0.02	0.05	0.04	0.03	0.02	0.04	0.04	0.03	0.03
P. balfouri (n=2)	min =	0.28	0.90	0.90	0.79	0.46	0.60	0.72	0.85	0.48
	max =	0.30	0.95	1.00	0.85	0.49	0.68	0.85	0.88	0.57
	\bar{x} =	0.29	0.93	0.95	0.82	0.47	0.64	0.79	0.86	0.53
	s =	0.01	0.02	0.05	0.03	0.01	0.04	0.07	0.01	0.05
P. sauteri (n=6)	min =	0.29	0.95	0.85	0.85	0.45	0.65	0.65	0.70	0.44
	max =	0.35	1.13	1.25	1.09	0.55	0.90	0.89	1.12	0.64
	\bar{x} =	0.32	0.97	1.15	0.98	0.50	0.81	0.82	0.87	0.56
	s =	0.03	0.06	0.14	0.08	0.03	0.10	0.08	0.13	0.07

Material and methods

Aedeagi are examined on slide in glycerol with a compound microscope and drawn with a drawing apparatus. They are mounted on plastic card in DMHF water-soluble resin (BAMEUL, 1990). The female genitalia are stained with chlorazol black E dye (C.I. N° 30235) following CARAYON (1969), and they are examined and drawn in the same way as aedeagi. All measurements are made with an eyepiece micrometer mounted on a stereomicroscope.

Psalitrus durisi sp. n.

Length: 1.250 mm; width: 1.00 mm. Oval, evenly and highly convex, castaneous to dark rufous, very finely and sparsely micropunctate.

Head dark rufous, pentagonal, transverse, with maximum width at top of eyes, abruptly narrowed in front of eyes and evenly so behind to base. Labrum large, yellow, with anterior margin slightly concave. Clypeus emarginate, nearly vertical, rufous, shining, smooth, extremely finely and sparsely micropunctate; sides with rectangular lateral prominences under antennal bases, finely margined in front and laterally, strongly depressed in front of eyes on sides, base of antennae visible from above. Fronto-clypeal suture obsolete. Front very finely micropunctate, shining. Eyes quite large, situated at top of lateral angles of head. Labial palpi and ligula covered by long, hair-like yellow setae. Maxillary palpi as long as antennae, testaceous, with 2nd segment dilated, 3rd segment shorter than 4th, 4th elongate and pointed at tip. Antennae 8-segmented (5 + 3), testaceous, 2nd

segment rounded, 3rd segment longer than 4th and 5th, club elongate and loose, not oval, darkened, with short setae becoming longer at tip.

Pronotum dark rufous, shining, very convex, transverse, very finely and sparsely micropunctate. Lateral edges very finely margined. Lateral margins evenly rounded. Front angles obtuse, rounded, hind angles nearly right. Scutellum dark rufous, small, forming an equilateral triangle.

Elytra castaneous, rufous along lateral sides, convex, their widest point near base. Main punctation formed by about 20 rows of points parallel to suture, not parallel to margin, quite close to each other. Points obsolete in scutellar and humeral regions, distant from each other by about two times their diameter. Sutural stria very obsolete, visible only in apical quarter. Background smooth, shining. Interstriae flat. Lateral margins not explanate, but distinctly margined.

Underside ferruginous, dull, microreticulate. Prosternum very short in front of procoxae, reduced to form a narrow vertical band, with a triangular flat apophysis raised in middle, distinctly margined; antennal cavities barely defined, consisting of an oval depression, not reaching lateral margins of pronotum, delimited by an oblique posterior ridge; procoxae contiguous. Mesosternal elevation pentagonal, distinctly margined, reaching the metasternum in front of mesocoxae by its posterior edge. Metasternum dull, central area distinctly elevated, pentagonal, with no metasternal lines nor ridges, completely covered with long yellow setae. Epipleura strongly developed at base, almost vertical, gradually narrowed by half of their width at level of metasternal hind edge, and from there about evenly wide posteriorly. Abdomen with 5 visible sternites, covered with dense, short yellow setae, first sternite without longitudinal carina, last sternite without emargination at apex in both sexes.

Legs ferruginous; femora dilated antero-laterally, covered with short, dense yellow setae; profemoral bases angulate at most distal point of trochanteral attachments; tibiae cylindrical, with 3 rows of spines, with spines at apex as long as first tarsomere; tarsi 5-segmented (5-5-5), covered by short yellow setae beneath; 1st tarsomere slightly longer than 2nd. Claws yellow, short. Wings fully developed.

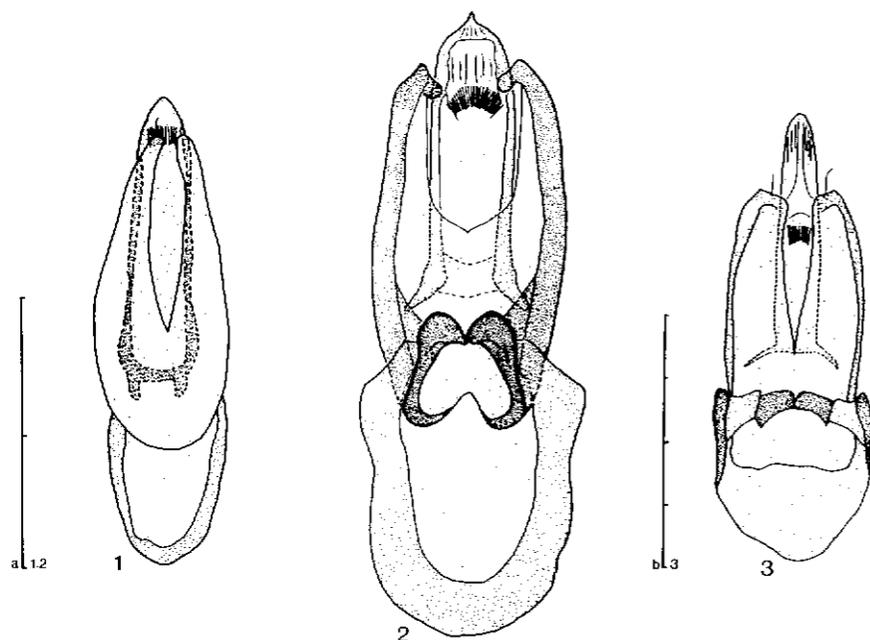
No visible secondary sexual dimorphism.

Aedeagus (Fig. 1) with median lobe longer than parameres, parallel-sided; parameres convex at sides, rounded at apex, about two times longer than phallobase.

Female ectodermal genitalia (Fig. 8) with globular spermatheca ($L = 142.53 \mu\text{m}$, $l = 117.24 \mu\text{m}$), nodulus not distinct, infundibulum short and large, spermathecal gland spherical, spermathecal duct: $L = 62.07 \mu\text{m}$.

Holotype: 1 ♂, Nigeria, Umudike, 10-13-IV-1960, J. L. GREGORY leg. Preserved in the Department of Entomology, The Natural History Museum, London (BMNH).

Paratypes: 22 ex., same data as holotype. Preserved in the BMNH and in the authors' collection.



Figs 1-3: Aedeagus: 1. *Psalitrus durisi* sp. n., 2. *P. dorchymonti*, 3. *P. sauteri*. Scale a: 0.2 mm, scale b: 0.4 mm.

Etymology: This new species is dedicated to my friend Pascal DURIS, biologist at the Université de Bordeaux II and historian of entomology and linneism.

Discussion: *P. durisi* is similar to the African species *P. dorchymonti* J. BALFOUR-BROWNE, 1948 and mainly to *P. villiersi* J. BALFOUR-BROWNE, 1948. It shares with both species the shining surface of the body with a very fine punctation in discal elytral region, and the general form of the aedeagus. But *P. durisi* differs from *P. dorchymonti* by its dull metasternum, entirely covered by short setae, while it is polished and glabrous at center in *P. dorchymonti*, and by the median lobe of aedeagus without short acute point at tip. *P. durisi* is more closely related to *P. villiersi* and shares with this species the metasternum entirely pubescent at center and a very similar aedeagus. However, the parameres are more convex at sides in *P. durisi* and they are more than two times longer than phalobase, while the parameres are about the same length as phalobase in *P. villiersi*. Another important difference is that the wings are vestigial in *P. villiersi* while *P. durisi* is fully alate in both sexes. *P. durisi* is also distinctly shorter than both *P. villiersi* and *P. dorchymonti*.

***Psalitrus dorchymonti* J. BALFOUR-BROWNE (emend.)**

Psalitrus vandenbosscheae D'ORCHYMONT, 1925: 159-160 (partim.)

Psalitrus d'Orchymonti J. BALFOUR-BROWNE, 1948: 387-389, Figs. 7 & 8.

P. dorchymonti was described from specimens from Pondoland, South Africa (male holotype) and Zambia-Rhodesia border, Rhodesia and Zaire. I have examined 26 specimens from Umudike, Nigeria, collected by J. L. GREGORY, 10-13-IV-1960, preserved in the Department of Entomology, The Natural History Museum, London (BMNH). The specimens agree entirely with the description by J. BALFOUR-BROWNE. The aedeagus (Fig. 2) shows some variation, especially at the apex of the median lobe that is more or less acutely pointed at tip. The female ectodermal genitalia (Fig. 7) are described here for the first time. They have a globular spermatheca ($L = 144.82 \mu\text{m}$, $l = 121.83 \mu\text{m}$), with globular nodulus and cornu, infundibulum as long as spermathecal duct ($L = 103.44 \mu\text{m}$). *P. dorchymonti* is new for Nigeria.

***Psalitrus balfouri* sp. n.**

Length: 1.225 mm; width: 0.90 mm. Oval, regularly convex, ferrugineous, dull, very finely and sparsely micropunctate.

Head ferrugineous, pentagonal, transverse, with maximum width at top of eyes, abruptly narrowed in front of eyes and evenly so behind to base. Labrum large, testaceous, with anterior margin slightly concave. Clypeus emarginate, nearly vertical, ferrugineous, very finely and sparsely micropunctate; sides with rectangular lateral prominences under antennal bases, finely margined in front and laterally, strongly depressed before eyes on sides, base of antennae visible from above. Fronto-clypeal suture obsolete. Front finely micropunctate. Eyes quite large, situated at top of lateral angles of head. Labial palpi and ligula covered by long hair-like yellow setae. [Maxillary palpi and antennae lacking in type specimens].

Pronotum ferrugineous, dull, very convex, transverse, very finely and sparsely micropunctate. Lateral edges very finely margined. Lateral margins evenly rounded. Front angles obtuse, rounded, hind angles nearly right. Scutellum ferrugineous, small, forming an equilateral triangle.

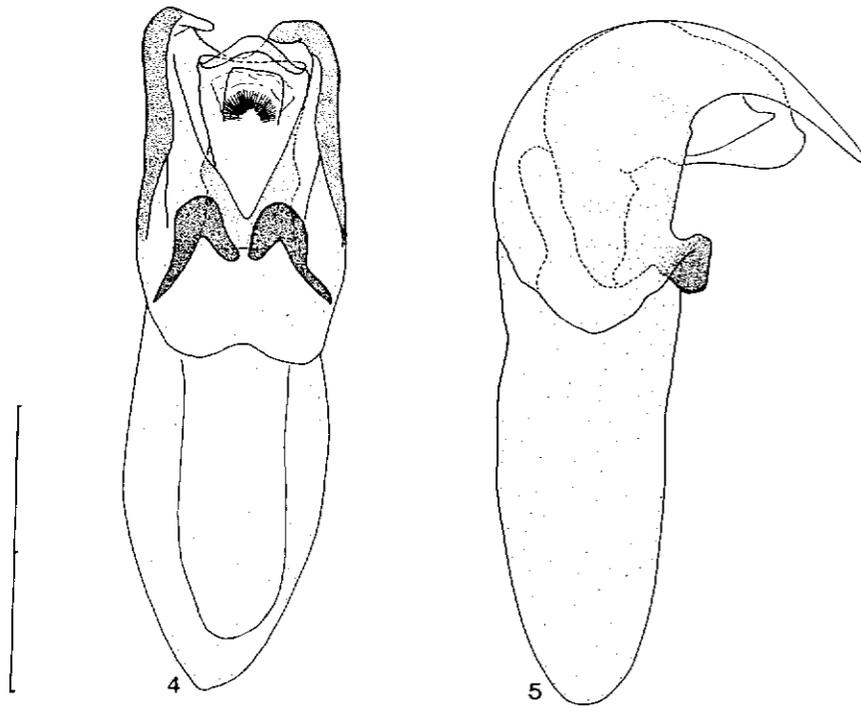
Elytra ferrugineous, convex, their widest point near base. Main punctation formed by about 20 rows of points parallel to suture, not parallel to margin, quite close to each other. Points obsolete in scutellar and humeral regions. Sutural stria very fine, visible only in apical quarter. Background very finely and sparsely micropunctate. Interstriae flat. Lateral margins not explanate, but distinctly margined.

Underside ferrugineous, dull, microreticulate. Prosternum very short in front of procoxae, reduced to form a narrow vertical band, with a triangular flat apophysis raised in middle, distinctly margined; antennal cavities barely defined, consisting of an oval depression, not reaching lateral margins of pronotum, delimited by an oblique posterior ridge; procoxae contiguous. Mesosternal elevation pentagonal, distinctly margined, reaching the metasternum in front of mesocoxae by its posterior edge. Metasternum shining and smooth at center, microreticulate in lateral

areas, central area distinctly elevated, pentagonal, with no metasternal lines or ridges, with sparse yellow setae. Epipleura strongly developed at base, almost vertical, gradually narrowed by half of their width at level of metasternal hind edge, and from there about evenly wide posteriorly. Abdomen with 5 visible sternites, covered with dense, short yellow setae, first sternite without longitudinal carina, last sternite without emargination at apex in both sexes.

Legs testaceous; femora dilated antero-laterally, covered with short, dense yellow setae; profemoral bases angulate at most distal point of trochanteral attachments; tibiae cylindrical, with 3 rows of spines, with spines at apex as long as first tarsomere; tarsi 5-segmented (5-5-5), covered by short yellow setae beneath; 1st tarsomere slightly longer than 2nd. Claws yellow, short. Wings present.

Aedeagus (Figs. 4 & 5) with median lobe large, short, rounded at apex, shorter than parameres; parameres curved dorsoventrally and pointed at apex, shorter than tegmen.



Figs 4-5: Aedeagus of *Psalitrus balfouri* sp. n., 4. sternal view, 5. profile view. Scale: 0.2 mm.

Female unknown.

Holotype: 1♂, Southern Sudan, Juba, collected at light, 30-X-1950, E.T.M. REID leg. Preserved in the Department of Entomology, The Natural History Museum, London (BMNH).

Paratype: 1♂, Southern Sudan, Yel, 28-X-1950, E.T.M. REID leg. Preserved in the BMNH.

Etymology: This new species is dedicated to Dr J. BALFOUR-BROWNE, who first recognized it as new, and named it *P. reidi* in the collection.

Discussion: *P. balfouri* cannot be confused with other known species of the genus, based on its aedeagus with a large and short median lobe and curved parameres. This type of parameres reminds more or less the curved parameres of *Omicrus brevipes* SHARP, 1879 as described by MALCOLM (1981a). This character is probably an apomorphy in the genus *Psalitrus*.

Psalitrus sauteri D'ORCHYMONT

Psalitrus sauteri D'ORCHYMONT, 1929: 92-93; J. BALFOUR-BROWNE, 1948: 386-387

Length: 1.425 mm; width: 1.150 mm. Broadly oval, regularly and highly convex, maximal convexity slightly before middle of elytra, ferrugineous, very finely and sparsely micropunctate.

Head ferrugineous, pentagonal, transverse, small in proportion to pronotum, with maximum width at top of eyes, abruptly narrowed in front of eyes and evenly so behind to base, with anterior margin straight. Labrum large, yellow to testaceous, with anterior margin slightly concave. Clypeus very finely emarginate, nearly vertical, ferrugineous, very finely and sparsely micropunctate; sides with rectangular lateral prominences under the antennal bases, finely margined in front and laterally, strongly depressed before eyes on sides, base of antennae visible from above. Fronto-clypeal suture obsolete. Front finely micropunctate. Eyes quite large, situated at top of lateral angles of head. Labial palpi and ligula covered by long, hair-like yellow setae. Maxillary palpi as long as antennae, testaceous, with 2nd segment dilated, 3rd segment shorter than 4th, 4th elongate and pointed at tip. Antennae 8-segmented (5 + 3), testaceous, 2nd segment rounded, 3rd segment longer than 4th and 5th, club elongate and loose, not oval, darkened, with short setae becoming longer at tip.

Pronotum ferrugineous, shining, very convex, transverse, very finely and sparsely micropunctate. Lateral edges very finely margined. Lateral margins evenly rounded. Front angles obtuse, rounded, hind angles nearly right. Scutellum ferrugineous, small, forming an equilateral triangle.

Elytra ferrugineous, highly convex, their widest point near base. Main punctation formed by about 20 rows of points parallel to suture, not parallel to margin, quite close each other. Points obsolete in scutellar and humeral regions, larger in apical region. Sutural stria absent. Background very finely and sparsely micropunctate. Interstriae flat. Lateral margins not explanate, but distinctly margined.

Underside ferrugineous, dull, microreticulate. Prosternum very short in front of procoxae, reduced to form a narrow vertical band, with a triangular flat apophysis raised in middle, distinctly margined; antennal cavities barely defined, consisting of an oval depression, not reaching lateral margins of pronotum, delimited by an oblique posterior ridge; procoxae contiguous. Mesosternal elevation pentagonal, distinctly margined, reaching the metasternum in front of mesocoxae by its poste-

rior edge. Metasternum shining at center, microreticulate only in lateral areas, central area slightly elevated, nearly pentagonal, with no metasternal lines or ridges, without setae. Epipleura strongly developed at base, almost vertical, gradually narrowed by half of their width at level of metasternal hind edge, and from there about evenly wide posteriorly. Abdomen with 5 visible sternites, covered with dense, short yellow setae, first sternite without longitudinal carina, last sternite without emargination at apex in both sexes.

Legs ferrugineous; femora dilated antero-laterally, covered with short, dense yellow setae; profemoral bases angulate at most distal point of trochanteral attachments; tibiae cylindrical, with 3 rows of spines, with spines at apex as long as first tarsomere; tarsi 5-segmented (5-5-5), covered by short yellow setae beneath; 1st tarsomere slightly longer than 2nd. Claws yellow, short. Wingless.

No visible secondary sexual dimorphism.

Aedeagus (Fig. 3) with median lobe very long, distinctly longer than parameres; parameres truncate at tip, longer than phalobase.

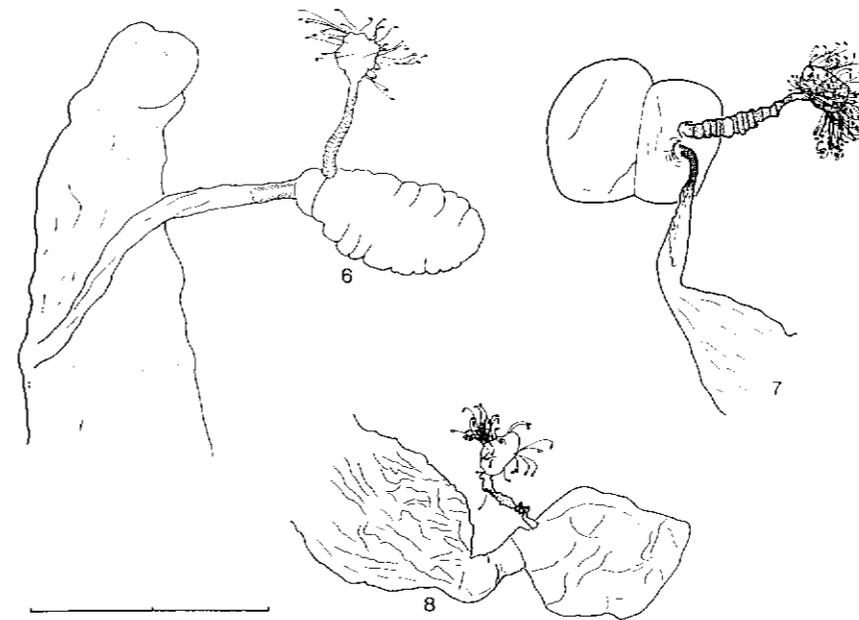
Female ectodermal genitalia (Fig. 6) with oval spermatheca ($L = 160.91 \mu\text{m}$, $l = 78.16 \mu\text{m}$), nodulus short, infundibulum short, spermathecal duct long ($L = 80.45 \mu\text{m}$) and slender, spermathecal gland nearly spherical, bursa copulatrix long and large.

Holotype: 1 ♀, by original designation, with spermatheca colored and embedded in a drop of DMHF on a plastic card, pinned under the specimen, labelled: «Kosempo, Formosa, H. Sauter VIII-09» / «gen. Phaenocephalus t. pnf. a [unreadable] à Londres» (in handwriting, 20 x 14 mm) / «Holotypus» (red) / «A. d'Orchymont det., Psalitrus Sauteri m., TYPE» (in D'ORCHYMONT's handwriting) / «Kein Phaenocephalus, van Emden det. 1928» / «prope Litrosurus?, van Emden det. 1928» / «Coll. DEI, Eberswalde» / «♀» / «Psalitrus sauteri d'Orch., HOLOTYPE, F. Bameul det. 1990».

Paratypes: 2 ♂♂ + 3 ♀♀, labelled: «Kosempo, Formosa, H. Sauter VIII-09» / «A. d'Orchymont det., Psalitrus Sauteri m., COTYPE» (in D'ORCHYMONT's handwriting) / «Paratypus» (red) / «Coll. DEI, Eberswalde» / «♂» or «♀» / «Psalitrus sauteri d'Orch., PARATYPE, F. Bameul det. 1990».

Preserved in the Deutsches Entomologisches Institut, Eberswalde-Finow, Germany (DEI).

Discussion: *P. sauteri*, from Taiwan, was only known by its short description. The male and female genitalia are described here for the first time. In its revision, BALFOUR-BROWNE (1948) had not been able to examine the type specimens. Thanks to the kindness of Dr Lothar ZERCHE, I have been able to study the original material. Based on its large size and the aedeagus with the median lobe distinctly longer than parameres, *P. sauteri* may be related to *P. bryanti* J. BALFOUR-BROWNE, 1948, described from Penang Island, Indonesia. However, *P. sauteri* does not share with *P. bryanti* the emargination of the last visible abdominal sternite.



Figs 6-8: Female ectodermal genitalia: 6. *Psalitrus sauteri*, 7. *P. dorchymonti*, 8. *P. durisi* sp. n. Scale: 0.2 mm.

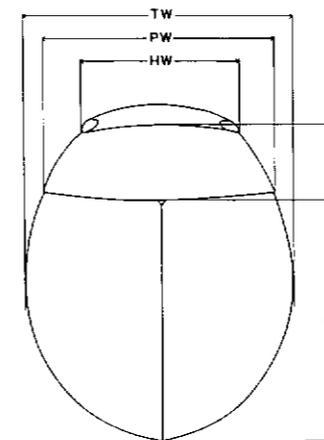


Fig. 9: Biometric variables.

Acknowledgements

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Serie "Adefagofauna acuatica hispano-portuguesa"
 II. Datos sobre la distribución en el Norte de la
 Península Ibérica de *Deronectes bertrandi* Legros, 1956
 (Col., Dytiscidae)
 con aspectos inéditos de su morfología

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Manuscrit accepté le 1 mars 1989
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Resumen

Dentro de la serie "Adefagofauna acuatica hispano-portuguesa" (Coleoptera) que vienen realizando los autores, se dedica este artículo al estudio de un endemismo ibérico: *Deronectes bertrandi* LEGROS, 1956; especie que fué capturada por primera vez el 19 de Julio de 1953 por BERTRAND, en el río Quiviesa, a su paso por la localidad cántabra de Potes.

El estudio faunístico realizado en la Cordillera Cantábrica (1) (provincias de León, Asturias y Cantabria) durante los años 1986 y 1987, ha permitido la captura de 77 imagos de este taxón. Sobre la base de estos ejemplares, los autores efectúan un análisis bibliográfico - mediante técnicas informáticas-, y aportan algunos aspectos inéditos de su morfología y otros complementarios de su distribución.

Résumé

Dans la série "Adephagofaune aquatique hispano-portugaise" (Coleoptera) que les auteurs sont en train de réaliser, nous consacrons cet article à l'étude d'un endémisme ibérique: *Deronectes bertrandi* LEGROS, 1956; cette espèce, a été capturée pour la première fois le 19 juillet 1953 par BERTRAND dans la rivière Quiviesa en Cantabria (= Santander, Espagne).

L'étude faunistique réalisée dans les massifs montagneux de l'Espagne (prov. de León, Asturias et Cantabria) entre les années 1986 et 1987, a permis la capture de 77 images de ce taxon. Sur la base de ces exemplaires, les auteurs ont effectué une analyse bibliographique avec des techniques informatiques, et ont apportés quelques aspects inédits de leur morphologie et d'autres qui sont un complément de leur distribution.

(1) Este trabajo se ha beneficiado de una bolsa de estudios del Plan de F.P.I., de la Dirección General de Política Científica del M.E.C. e igualmente del proyecto de la C.A.I.C.Y.T. n° PR.84-0921-C02-01. También ha recibido ayuda de la Excma. Diputación Provincial de León, 1986, 1987.