

***Platyspathius picardi* sp. nov., a new European species of the genus
Platyspathius Viereck, 1911 (Hymenoptera: Braconidae: Doryctinae)**

***Platyspathius picardi* sp. nov. – новый европейский вид рода
Platyspathius Viereck, 1911 (Hymenoptera: Braconidae: Doryctinae)**

S.A. BELOKOBYSLSKIJ* & C. VILLEMANT

С.А. БЕЛОКОБЫЛЬСКИЙ, К. ВИЛЬМОНТ

S.A. Belokobylskij, Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., St Petersburg 199034, Russia; Museum and Institute of Zoology, Polish Academy of Sciences, 64 Wilcza, Warsaw 00-679, Poland. E-mail: doryctes@gmail.com

C. Villemant, Institut de Systématique, Évolution, Biodiversité, ISYEB, UMR 7205 – CNRS, MNHN, UPMC, EPHE, Muséum National d'Histoire Naturelle, Sorbonne Universités, 57 rue Cuvier, CP50, 75231 Paris cedex 05, France. E-mail: villeman@mnhn.fr

A new Western Palaearctic species of the genus *Platyspathius* Viereck, 1911, *P. picardi* sp. nov. is described and illustrated. This species is the most similar to the Afrotropical *P. clymene* Nixon, 1941 and the Eastern Palaearctic *P. hospitus* Belokobylskij et Ku, 2001 with which it is compared. A key for determination of the Palaearctic species of *Platyspathius* is provided.

Описывается и иллюстрируется новый западнопалеарктический вид рода *Platyspathius* Viereck, 1911 – *P. picardi* sp. nov. Этот вид наиболее близок к афротропическому *P. clymene* Nixon, 1941 и восточнопалеарктическому *P. hospitus* Belokobylskij et Ku, 2001, с которыми он сравнивается. Предлагается ключ для определения всех палеарктических видов рода *Platyspathius*.

Key words: braconids, parasitoid wasps, taxonomy, France, Hymenoptera, Braconidae, Doryctinae, *Platyspathius*, new species

Ключевые слова: бракониды, паразитоиды, таксономия, Франция, Hymenoptera, Braconidae, Doryctinae, *Platyspathius*, новый вид

INTRODUCTION

The genus *Platyspathius* Viereck, 1911, with *P. pictipennis* Viereck, 1911 as type species, is a small taxon including 12 species distributed in the Old World and predominantly in its tropical and subtropical zones (Nixon, 1943; van Achterberg, 2003; Yu et al., 2012). Species of this genus have been reared from the beetle larvae of the family Bostrichidae (Belokobylskij & Maeto, 2009; Yu et al., 2012).

Two subgenera, *Platyspathius* s. str. and *Lenticularia* van Achterberg, 2003, were recognized in the genus *Platyspathius* (van

Achterberg, 2003). The nominotypical subgenus which includes the most part of the described species is widely distributed in the Old World territory. The second subgenus *Lenticularia*, with *Doryctes lenticularis* Granger, 1949 as type species, has a range exclusively restricted to Madagascar.

The taxonomic placement of *Platyspathius* in the doryctine group varied over time. It was for a long time a member of the tribe Spathiini (Nixon, 1943; Shenefelt & Marsh, 1976; Belokobylskij, 1992) because it shows one of the main apomorphic features of this tribe, the elongated (at least partly) acrosternite (basal sternite) of the first metasom-

al segment (Belokobylskij, 1992). However, the recently published molecular phylogeny of the Doryctinae genera (Zaldívar-Riverón et al., 2008) distinctly showed the relation between *Platyspathius* and a group of taxa belonging to the restored tribe Rhaconotini.

We describe below a new species of *Platyspathius* having completely developed notauli. It is the second taxon of this genus recorded in the Western Palaearctic.

MATERIAL AND METHODS

The studied material originates from the collection of Muséum National d'Histoire Naturelle, Paris, France (MNHN). For the descriptive part, specimens were examined using a MC-2 stereomicroscope. The images were taken with a Leica IC 3D digital camera mounted on a Leica MZ16 microscope and using the Leica Application Suite imaging system (Museum and Institute of Zoology, Warsaw, Poland).

The terminology employed in this work for the morphological features and measurements follows Belokobylskij & Maetô (2009). The wing venation nomenclature follows Belokobylskij and Maetô (2009) and, in brackets, that of Sharkey & Wharton (1997). The holotype and most part of the paratypes of the new species are preserved in the collection of MNHN, while two paratypes are in the collection of the Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia (ZIN).

TAXONOMIC PART

Order **HYMENOPTERA**

Family **BRACONIDAE**

Subfamily **DORYCTINAE**

Genus *Platyspathius* Viereck, 1911

Platyspathius (Platyspathius) picardi

Belokobylskij et Villemant, **sp. nov.**

(Figs 1–18)

Holotype. Female; **France**, “Montpellier, figuier – VI – 18. Jean Lichtenstein”, “*Spathi-*

us n. sp.”, “Coll. F. Picard (coll. Lichtenstein) Mus. Paris 1939” (MNHN).

Paratypes. **France**: 5 females, “Montpellier, figuier – VI – [19]18. Jean Lichtenstein coll.”, “Coll. F. Picard (coll. Lichtenstein) Mus. Paris 1939” (MNHN, ZISP); 1 female, “figuier 23/5”, “? parasite de *anobium striatum*” (MNHN); 3 females, “St. Guilhem, Herault”, “Coll. F. Picard (coll. Lichtenstein) Mus. Paris 1939”, “*Spathius* n. sp. ? ou Hecabolide” (handwriting) (MNHN, ZISP).

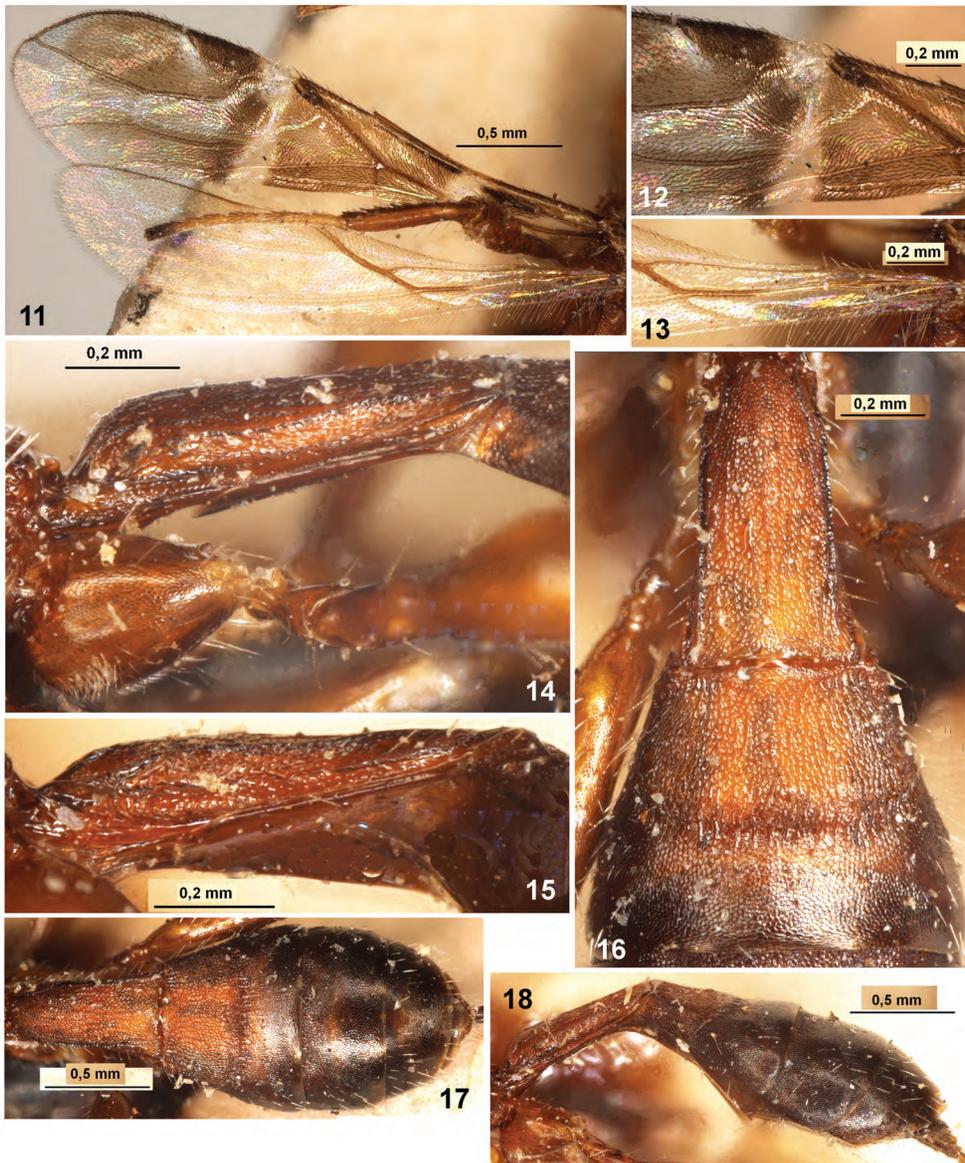
Description. Female. Body length 2.8–4.5 mm; fore wing length 1.8–3.0 mm.

Head width 1.3–1.5 times its median length, 1.2–1.3 times width of mesoscutum. Head behind eyes (dorsal view) distinctly and roundly narrowed or sometimes (in small specimens) weakly convex in anterior half and roundly narrowed in posterior half. Transverse diameter of eye 1.4–1.5 (rarely 1.1 in small specimens) times length of temple (dorsal view). Ocelli small, arranged in equilateral triangle; POL about 2.0 (rarely 1.5) times Od, 0.4–0.5 (rarely 0.3) times OOL. Eye glabrous, almost not emarginated opposite antennal sockets, 1.2–1.3 times as high as broad. Malar space 0.6–0.7 times height of eye, 0.65–0.80 times basal width of mandible, but in small specimens almost equal to it. Face width 1.1–1.2 (rarely 1.3) times height of eye and 1.4–1.5 times height of face and clypeus combined. Malar suture absent. Upper margin of clypeus situated distinctly lower than ventral margin of eyes. Hypoclypeal depression round, small, its width 0.45–0.50 times distance from edge of depression to eye, 0.30–0.35 times width of face. Clypeus with short ventral flange. Occipital carina not fused ventrally with hypostomal carina obliterating shortly upper base of mandible. Vertex convex. Head below eyes distinctly and curvedly narrowed (front view).

Antennae slender, filiform, 24–31-segmented, about as long as body. Length of scape 1.7–1.8 times its maximum width. First flagellar segment 4.3–4.5 (rarely 5.0) times longer than its apical width, almost as long as second segment. Penultimate segment 2.4–2.8 times longer than wide, 0.5–



Figs 1–10. *Platyspathius picardi* sp. nov., female (1–8, 10, holotype; 9, paratype): 1, body, dorsal view; 2, head, dorsal view; 3, head, front view; 4, head, lateral view; 5, basal segments of antenna; 6, apical segments of antenna; 7, fore tibia; 8, hind femur and tibia; 9, mesosoma, lateral view; 10, mesosoma, dorsal view.



Figs 11–18. *Platyspathius picardi* sp. nov., female (11–13, 16, 17, holotype; 14, 15, 18, paratype): 11, fore and hind wings; 12, median part of fore wing; 13, basal part of hind wing; 14, first metasomal tergite, lateral view; 15, first metasomal tergite, lateroventral view; 16, first-third metasomal tergites, dorsal view; 17, metasoma, dorsal view; 18, metasoma, lateral view.

0.6 times as long as first flagellar segment, about as long as apical segment; the latter pointed apically and without apical spine.

Mesosoma. Length 1.75–1.90 times its height. Pronotal carina dorsally double and rather distinct, its posterior branch fused

with posterior margin of pronotum on wide median distance, its anterior branch situated on pronotum submedially. Mesoscutum high and roundly elevated above pronotum. Notauli rather deep, more shallow posteriorly, complete, wide, distinctly and

sparsely crenulate in anterior 0.7–0.8 and only finely granulate-reticulate in posterior 0.2–0.3. Median lobe of mesoscutum without median furrow. Prescutellar depression rather deep, weakly shorter medially than laterally, weakly and linearly directed posterolaterally, with a distinct complete median carina and two short incomplete lateral carinae, very finely coriaceous, medially 0.30–0.35 times as long as scutellum. Scutellum distinctly convex, usually with lateral carinae in basal half. Subalar depression shallow, wide, entirely granulate-coriaceous and with fine additional undulate crenulation. Sternaulus shallow, narrow, slightly sinuate, finely and densely reticulate-crenulate, running along anterior 0.6–0.7 of lower part of mesopleuron. Prepectal carina with widened lobes opposite to fore coxae. Metanotum with short and obtuse tooth (lateral view). Metapleural lobe short, wide basally and distinctly narrowed towards apex, rounded apically, without dense pubescence, with high lower flange posteriorly. Mesopleural suture distinct and complete.

Wings. Fore wing 3.5–3.7 (rarely 4.1) times its maximum width. Radial (marginal) cell weakly shortened. Metacarp (R1a) 1.15–1.30 times longer than pterostigma. Radial vein (r) arising before middle of pterostigma, from its basal 0.4. First radial abscissa (r) forming obtuse angle with second abscissa (3RSa). Second radial abscissa (3RSa) 3.0–3.8 times longer than first abscissa (r), about 0.6 times as long as the weakly curved third abscissa (3RSb), 1.3–1.5 times longer than first radiomedial vein (2RS). Second radiomedial (submarginal) cell rather long, slightly narrowed distally, 2.6–2.7 (sometimes 3.3) times longer than wide, 1.10–1.25 times longer than the wide brachial (first subdiscal) cell. First medial abscissa ((RS+M)a) sinuate. Discoidal (first discal) cell almost sessile anteriorly. Recurrent vein (m-cu) distinctly postfurcal, 1.1–1.4 times longer than second abscissa of medial vein ((RS+M)b). Mediocubital vein (M+CU) strongly curved to anal vein (1A) in distal half. Nervulus (cu-a)

weakly postfurcal or (in small specimens) interstitial, distance between nervulus (cu-a) and basal vein (1M) 0.15–0.20 times nervulus (cu-a) length. Brachial (first subdiscal) cell roundly closed weakly before or on level of recurrent vein (m-cu); bulla in this place almost absent; posterior abscissa of anal (3-1A) vein [behind brachial (2cu-a) vein] more or less distinct. Hind wing 4.5–4.8 times longer than wide. First costal abscissa (C+Sc+R) 0.7–0.8 times as long as second abscissa (SC+R). First abscissa of mediocubital vein (M+CU) 0.5–0.6 times as long as second abscissa (1M). Recurrent vein (m-cu) unsclerotised, strongly slanted toward base of wing, interstitial.

Legs. Hind coxa with basoventral corner, with small tubercle covered by dense white setae, 1.3–1.4 times longer than wide (with tubercle). Hind femur with rather distinct and wide dorsal protuberance, length of femur 3.0–3.3 times its maximum width. Hind tarsus 0.9–1.0 times as long as hind tibia. Hind basitarsus 0.6–0.7 times combined length of second-fifth segments. Second tarsal segment half as long as basitarsus, 1.3–1.5 times longer than fifth segment (without pretarsus).

Metasoma almost as long as or weakly longer than head and mesosoma combined, with five dorsally visible tergites, following tergites very weakly protruding behind fifth one. Acrosternite of first segment weakly elongated, 0.30–0.35 times as long as first tergite. First tergite weakly and evenly widened basally, with short but distinct and wide basal prominences, evenly and rather distinctly widened from fine spiracular tubercles to apex; spiracles situated in basal 0.25–0.30, with distinct dorsal carinae in basal fifth. Maximum width of first tergite 1.8–2.0 times basal width; its length 1.7–1.9 times apical width, 1.6–1.7 times length of propodeum. Second tergite without basal and apical areas, sometimes with very fine additional transverse furrow subposterio-ly. Median length of second tergite 0.70–0.75 times its basal width, 1.3–1.5 times length of third tergite. Second suture shal-

low, rather wide, distinct, evenly curved. Fifth tergite weakly enlarged, slightly and evenly rounded in posterior margin, without medioposterior emargination, without posteroventral lateral lobes. Fifth tergite 0.70–0.75 times as long as fourth tergite, almost as long as third tergite. Ovipositor sheath 1.3–1.6 times longer than metasoma, 1.9–2.3 times longer than mesosoma, 1.1–1.2 times longer than fore wing.

Sculpture and pubescence. Vertex entirely densely granulate-reticulate, without rugulosity or striation; frons densely granulate-reticulate, partly with oblique striation. Face and temple entirely densely areolate-granulate, face medially and temple below finely sculptured. Mesoscutum and scutellum densely and finely reticulate, mesoscutum in medioposterior 0.4–0.5 with distinct median carina and fine or very fine rugulosity around it, without rugae along notauli. Mesopleuron finely or very finely coriaceous, its upper part more distinctly reticulate-coriaceous. Metapleuron finely or very finely reticulate-coriaceous, with rugosity posteriorly. Propodeum without areas, entirely densely granulate with transverse rugose-striate sculpture in posterior 0.4, with complete distinct and convergent lateral carinae, with shallow and weakly crenulate median furrow or fine carina in basal 0.6–0.7. Hind coxa and femur densely and finely to very finely coriaceous becoming almost smooth below. First tergite covered with rather dense and fine striation, with very dense and distinct reticulation between striae; in small specimen tergite entirely only reticulate-areolate. Second tergite with very dense reticulation and fine and sparse striation, but without striation in small specimens. Suture between second and third tergites distinctly crenulate, crenulae shortly proceeded on tergites, in small specimen without striation. Third-fifth tergites entirely densely and finely or (posteriorly) very finely coriaceous, without striation. Vertex mainly glabrous, with short sparse and semi-erect pale setae laterally. Mesoscutum mainly glabrous, with

rather sparse, medium length and semi-erect pale setae along notauli and marginally. Mesopleuron mainly sparsely setose, glabrous around sternaulus. Hind tibia dorsally with medium length, rather sparse and semi-erect white setae, length of these setae 0.4–0.6 times maximum width of hind tibia.

Colour. Head and anterior half of mesosoma yellowish brown, posterior half of mesosoma and anterior half of metasoma reddish brown to light reddish brown, posterior half of metasoma dark reddish brown to usually almost black. Antenna yellow to yellowish brown or light reddish brown, apically dark reddish brown. Palpi entirely dark reddish brown. Legs reddish brown, paler basally, all tarsi yellowish brown with basal half of basitarsi yellow, fifth segments almost black; hind tibia infusate basally. Ovipositor sheath brown to black, but sometimes mainly light brown. Fore wing with large dark spots and stripes separated by narrow hyaline stripes basally, subbasally and at level of basal quarter of pterostigma and with wide hyaline spot at wing apex. Hind wing almost hyaline. Pterostigma dark brown, white in basal third.

Male. Unknown.

Host. (?) *Anobium punctatum* (De Geer, 1774) (Anobiidae).

Comparative diagnosis. According to Achterberg key (2003), *Platyspathius picardi* sp. nov. is similar to the Afrotropical *P. clymene* Nixon, 1941, but differs from it by having the head wider across eyes than behind eyes (as wide behind eyes as across them in *R. clymene*), mesoscutum highly elevated above pronotum (weakly and gently elevated in *P. clymene*), mesoscutum medioposteriorly with median longitudinal carinae and with fine narrow rugulosity (without median carina and distinctly rugose on wide area in *P. clymene*), scutellum distinctly convex (weakly convex in *P. clymene*), radial vein (r) arising before middle of pterostigma (from middle of pterostigma in *P. clymene*), petiole 1.8–2.0 times longer than apical width and with distinct longitudinal striae with granulation (2.5 times and

only sometimes finely rugulose in *P. clymene*), ovipositor sheath distinctly longer than metasoma (a little longer in *P. clymene*), radial cell weakly shortened (not shortened in *P. clymene*), head and mesosoma light reddish brown (mainly dark brown to black in *P. clymene*).

Differences between a new species and the Eastern Palaearctic *P. hospitus* Belokobylskij et Ku (Belokobylskij & Ku, 2001) are showed in the key below.

Etymology. This species is named in honour of French braconidologist Dr F. Picard for his valuable contribution to the study of the Doryctinae parasitoid wasps.

Distribution. France.

Key to the Palaearctic species of the genus *Platyspathius*

1. Notauli complete, distinct posteriorly, crenulate at least in anterior half. Mesoscutum medioposteriorly at least with single longitudinal carina and rugulosity. Second metasomal tergite striate at least near and on second suture 2
- Notauli incomplete, absent posteriorly, finely reticulate or smooth. Mesoscutum medioposteriorly without striation and rugulosity. Second metasomal tergite always without striation and second suture without crenulation 3
2. POL usually 2.0 times Od. Malar space 0.65–0.80 times basal width of mandible. Sternaulus finely and densely reticulate. Radial vein (r) arising before middle of pterostigma, from its basal 0.4. Second radial abscissa (3RSa) 0.6 times as long as third abscissa (3RSb), 1.3–1.5 times longer than first radiomedial vein (2RS). Second radiomedial (submarginal) cell usually 2.6–2.7 times longer than wide. Second tergite without apical area delineated by furrow. Ovipositor sheath 1.3–1.6 times longer than metasoma, 1.1–1.2 times longer than fore wing. Mesoscutum with distinct single median carina in medioposterior half. Body length 2.8–4.5 mm. – France ***P. picardi* sp. nov.**
- POL 1.1–1.2 times Od. Malar space almost equal to basal width of mandible. Sternaulus densely crenulate. Radial vein (r) arising almost from middle of pterostigma. Second radial abscissa (3RSa) 0.8 times as long as third abscissa (3RSb), 1.5–2.0 times longer than first radiomedial vein (2RS). Second radiomedial (submarginal) cell 3.5 times longer than wide. Second tergite with distinct apical area delineated by crenulate furrow. Ovipositor sheath 0.8–0.9 times as long as metasoma, 0.6 times as long as fore wing. Mesoscutum with two distinct and convergent posteriorly carinae in medioposterior half. Body length 3.6–3.8 mm. – Korea ***P. hospitus*** Belokobylskij et Ku, 2001
3. Antenna of female 22-segmented. Ovipositor sheath about 1.3 times as long as metasoma. Three-four apical antennal segments dark brown. Nervulus (cu-a) of fore wing hardly postfurcal. Whitish band below base of pterostigma continuous. Second metasomal suture only granulate. Body length 2.6–3.3 mm. – France, Italy ***P. europaeus*** van Achterberg, 2003
- Antenna of female 26–32-segmented. Ovipositor sheath 0.8–1.0 times as long as metasoma. Five-nine apical antennal segments more or less dark brown. Nervulus (cu-a) of fore wing usually distinctly postfurcal. Whitish band below base of pterostigma widely interrupted. Second metasomal suture more or less distinctly crenulate. Body length 2.7–4.1 mm. – Japan, Taiwan, Philippines, India, Fiji ***P. ornatulus*** (Enderlein, 1912) [= ***P. dinoderi*** (Gahan, 1925)]

ACKNOWLEDGEMENTS

This work was supported in part by the Russian Foundation for Basic Research (project No. 13–04–00026) and the Russian state research project No. 01201351189 to the first author.

REFERENCES

- Achterberg C. van.** 2003. The West Palaearctic species of the genera *Gildoria* Hedqvist and *Platyspathius* Viereck, with keys to the species (Hymenoptera: Braconidae: Doryctinae). *Zoologische Mededelingen*, **77**(15): 267–290.
- Belokobylskij S.A.** 1992. On the classification and phylogeny of the braconid wasps of subfamilies Doryctinae and Exothecinae (Hymenoptera, Braconidae). Part I. On the classification, 1. *Entomologicheskoe Obozrenie*, **71**(4): 900–928. [In Russian].

- Belokobylskij S.A. & Ku D.-S.** 2001. A new species of the genus *Platyspathius* Viereck (Hymenoptera, Braconidae, Doryctinae) from Korea. *Insecta Koreana*, **18**(1): 37–40.
- Belokobylskij S.A. & Maeto K.** 2009. *Doryctinae (Hymenoptera, Braconidae) of Japan*. (Fauna mundi. Vol. 1). Warszawa: Warszawska Drukarnia Naukowa. 806 pp.
- Nixon G.E.J.** 1943. A revision of the Spathiinae of the Old World (Hymenoptera, Braconidae). *Transactions of the Royal Entomological Society of London*, **93**: 173–456.
- Sharkey M.J. & Wharton R.A.** 1997. Morphology and terminology. In: **Wharton R.A., Marsh P.M., Sharkey M.J.** (Eds). *Manual of the New World genera of the family Braconidae (Hymenoptera)*: 21–40. Washington: International Society of Hymenopterists.
- Shenefelt R.D. & Marsh P.M.** 1976. *Hymenopterorum Catalogus. Pars 13. Braconidae 9. Doryctinae*: 1263–1424. 's-Gravenhage: Dr W. Junk.
- Yu D.S., van Achterberg C. & Horstman K.** 2012. *Taxapad 2012, Ichneumonoidea 2011. Database on flash-drive*. Ottawa, Ontario, Canada.
- Zaldívar-Riverón A., Belokobylskij S.A., León-Regagnon V., Briceño R. & Quicke D.L.J.** 2008. Molecular phylogeny and historical biogeography of the cosmopolitan parasitic wasp subfamily Doryctinae (Hymenoptera: Braconidae). *Invertebrate Systematics*, **22**: 345–363.

Received March 24, 2015 / Accepted April 29, 2015