

A new species of *Vesperus* from the Natural Park Sierras de Cazorla, Segura y las Villas, *Vesperus saquranus* sp. nov. (Coleoptera, Vesperidae)

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ABSTRACT

Vesperus saquranus sp. nov. is described with specimens collected in the Natural Park Sierras de Cazorla, Segura y Las Villas (Jaén, Spain). A comparative diagnosis with the closest taxa of group II (*sensu* Verdugo, 2008) of the Iberian Peninsula, *Vesperus xatarti* Dufour, 1839; *Vesperus fuentei* Pic, 1905; *Vesperus gomezi* Verdugo, 2004 and *Vesperus lucasi* Barreda & Mejías, 2013, is established. *V. saquranus* sp. nov. may be separated from the closest species by morphological and biometric characters.

Key words: Coleoptera, Vesperidae, *Vesperus saquranus* sp. nov. description, taxonomy, Jaén, Andalusia, Iberian Peninsula.

INTRODUCTION

The number of species of the genus *Vesperus* Dejean, 1821 in the Iberian Peninsula has undergone a significant increase in recent years since the review of the genus by Vives (2004). With the last three new species described to date, *V. gomezi*, *V. barredai* and *V. lucasi*, there are 13 taxa known from the Iberian territory (Barreda & Mejías García, 2013), 11 of them are endemic.

The study of the genus is complex due to the morphological variability of some species. The taxonomic problems posed by this variability have begun to be solved thanks to the use of biometric characters initiated by Barreda & Mejías (2013) which we also use in our work.

Among the beetles collected during the sampling carried out in different parts of the province of Jaén (SE Spain), there was found existence of a group of *Vesperus* specimens from the Natural Park Sierras de Cazorla, Segura y las Villas initially assigned to *V. fuentei* due to coloration and size. After a detailed study, it has been verified that these specimens have characters that allow them to be separated from both *V. fuentei* and any other nearby species. We describe these specimens as a new species, *Vesperus*

saquranus sp. nov.

MATERIAL AND METHODS

The morphological study of specimens was done with an Olympus SZ 6045 stereoscopic microscope equipped with a 24 OC-M 10/100 eye micrometer and a Canon EOS D-1000 digital camera. The holotype photo was taken with a Canon EOS D-1000 digital camera and a Canon MPE 65mm f / 28 1-5x macro lens.

The followings measurements have been taken: body length (from posterior margin of labrum to elytral apex), elytra width (at the level of the base of elytra), elytra length (from base of scutellum to elytral apex along the suture), head length (from the base of the labrum to the occiput in side view), head width (measured across both eyes at their widest point) and interocular width (distance between the inner edge of the eyes).

The study of genital apparatus has been carried out following the technique and terminology proposed by Hernández de Miguel (2000). The aedeagus and the different pieces were extracted from the specimens and introduced in Scheerpeltz

liquid for cleaning and dissection. Once the different parts were separated, cleaned with distilled water and mounted using DHMF resin on acetate sheets, they were placed on the pins of the corresponding specimens.

Data from locality labels are cited “verbatim” with our comments in [square brackets] and italics to indicate that part of the text contains some clarification or annotation not explicitly reflected in the original label.

A total of 86 specimens of *V. xatarti* (24 exs.), *V. gomezi* (14 exs.), *V. fuentei* (26 exs.) and *V. lucasi* (22 exs.) from different Iberian locations were studied belonging to the collection of the Museo Nacional de Ciencias Naturales de Madrid and some private collections. The following acronyms are used throughout the text:

ACC	Alejandro Castro collection, Jaén, Spain.
AVC	Antonio Verdugo collection, San Fernando, Spain.
LTC	Luis Tolosa Collection, Zaragoza, Spain.
MBC	Manuel Baena collection, Córdoba, Spain.
MLC	Marcos A. López collection, Jaén, Spain.
MGC	Miguel A. Gómez de Dios collection, Huércal de Almería, Spain
MNCN	Museo Nacional de Ciencias Naturales collection, Madrid, Spain.
SDC	Sergey Dementyev collection, Moscú, Russia.

***Vesperus saquranus* sp. nov.**

(Fig. 1-4-5-6-7-9-11)

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Type specimens studied — *Vesperus saquranus* **sp. nov.**: Holotype (1 ♂, MLC) (Fig. 1): España; Jaén; Parque Natural de Cazorla, Segura y las Villas; Campos de Hernán Perea, 1600 m. 16.VIII.2016. M. López & A. Castro Tovar leg.; Paratypes (48 ♂♂): España; Jaén; Parque Natural de Cazorla,

Segura y las Villas; Campos de Hernán Perea, 1600 m. 16.VIII.2016. M. López & A. Castro Tovar leg. (34 ♂♂); España; Jaén; Parque Natural de Cazorla, Segura y las Villas; “pino” de Félix Rodríguez de la Fuente. 16.VIII.2016. M. López & A. Castro Tovar leg. (1 ♂); España; Jaén; Parque Natural de Cazorla, Segura y las Villas; Campos de Hernán Perea, 1600 m. 16.VIII.2017. M. López & M. Baena leg. (3 ♂♂); España; Jaén; Parque Natural de Cazorla, Segura y las Villas; “pino” de Félix Rodríguez de la Fuente. 16.VIII.2017. M. López & M. Baena leg. (1 ♂); España; Jaén; Parque Natural de Cazorla, Segura y las Villas; Campos de Hernán Perea, 1600 m. 17.VIII.2019. M. López & M. Baena leg. (7 ♂♂); España; Jaén; Parque Natural de Cazorla, Segura y las Villas; Campos de Hernán Perea, 1600 m. 16.VIII.2020. M. López leg. (2 ♂♂).

Paratypes deposited in ACC, AVC, LTC, MBC, MLC, MGC, MNCN and SDC.

Material examined — *V. xatarti* (Fig. 2A): Jaén, Ctra. Puente de la Sierra, 13/28.I.2003, A. Castro Tovar leg. (5 ♂♂, ACC); Jaén, Ctra. Puente de la Sierra, Urb. Las Olivas, 2.I.2010, M. López leg. (2 ♂♂, MLC); Huesca, Candasnos (Bajo Cinca), 59-200 m, 1.XII.2018, Pérez De-Gregorio i M. Bravo leg., MNCN Ent. 242763 (1 ♂, MNCN); Zaragoza, 20.XI.1975, P. Rovira leg. (2 ♂♂, ACC); Teruel, Barrachina, 20.III.2004, L. Tolosa leg. (3 ♂♂, MLC); Ciudad Real, Valdepeñas, 3.XI.2009, M. López leg. (4 ♂♂, MLC); Barcelona, Valldoreix, 13.XII.1959, J. Ribes leg. (1 ♂, ACC); Barcelona, Sant Sadurní d’Osormort, 11.III.1994, J. Muñoz Batet leg. (2 ♂♂, ACC); Lérida, 8.XI.1992, L. Tolosa leg. (2 ♂♂, MLC); Lérida, Meseta de Gardeny, 18.XI.1992, L. Tolosa leg. (2 ♂♂, MLC).

V. gomezi (Fig. 2B): Granada, Albuñuelas, Prados de Lopera, 1280 mts, 30.VIII.2014, M. López leg. (5 ♂♂, MLC); the same data but 26.VIII.2016 (9 ♂♂, MLC).

V. fuentei (Fig. 3A): La Lobera, Albacete, sin datos, MNCN_Ent 242679 (1 ♂, MNCN); Ciudad Real, Argamasilla de Alba, Ciudad Real, 24.IX. [19] 88, J. L. Sánchez de Vivar [leg.], ex. Colección Miguel Soler, MNCN_Ent 185367 (1 ♂, MNCN); same data but MNCN_Ent 185368 (1 ♂, MNCN); Ciudad Real, Lagunas de Ruidera, 22.IX. [19] 89, M. Ortega [leg.], ex. Colección Miguel Soler, MNCN_Ent 185369 (1 ♂, MNCN); Cuenca, Uclés, set. Pantel,

cogidos en tela de araña, MNCN_Ent 242683 (1 ♂, MNCN); [*Madrid prov.*], Aranjuez, V.1907, MNCN_Ent 242699 (1 ♂, MNCN); Madrid, Carabaña, 26.09.1971, A. Serrat [*leg.*], MNCN_Ent 242714 (1 ♂, MNCN); Madrid, J. Abajo [*leg.*], MNCN_Ent 242686 (1 ♂, MNCN); same data but MNCN_Ent 242687 (1 ♂, MNCN); Madrid, J. Ardois [*leg.*], MNCN_Ent 242696 (1 ♂, MNCN); same data but MNCN_Ent 242697 (1 ♂, MNCN); [*Madrid prov.*], Montarco, [*Escalera*], MNCN_Ent 242701 (1 ♂, MNCN); same data but MNCN_Ent 242702 (1 ♂, MNCN); [*Madrid prov.*], Rivas [*Vaciamadrid*], G. Carrasco [*leg.*], MNCN_Ent 242707 (1 ♂, MNCN); same data but MNCN_Ent 242708 (1 ♂, MNCN); same data but MNCN_Ent 242709 (1 ♂, MNCN); same data but MNCN_Ent 242710 (1 ♂, MNCN); same data but MNCN_Ent 242711 (1 ♂, MNCN); Torres de la Alameda, Madrid, 13.IX.1994, P. Bercedo leg. (2 ♂♂, ACC); same data but 8.IX.1995 (1 ♂, MLC); same data but 9.IX.1992 (3 ♂♂, ACC), same data but 13.IX.1992 (2 ♂♂, ACC).

V. lucasi (Fig. 3B): PARATYPUS, Córdoba, Lucena, Cuatro Cerros, campo de tiro, 13.IX.2012, M. Baena, M. Mejías & Barreda leg. (2 ♂♂, MLC); same data but 11/12.IX.2015, M. López leg. (10 ♂♂, MLC); same data but 26.IX.2016, A. Castro Tovar leg. (10 ♂♂, ACC).

Description of the holotype — Length: 19.1 mm, width 5 mm. Head light brown with a slightly protruding and rounded occipital region; 1.13 times longer than wide. Labial and maxillary palps light yellowish covered with golden pubescence, maxillae with claviform last segment. Mandibles strong arched with pointed apex, inner ridge orange and black, outer ridge with long, straight, yellowish bristles. Labrum rectangular, slightly sinuated in the center and covered with long and erect bristles. Eyes reniform, large, salient and grossly faceted, his outline protrudes from the plane of the front in side view. Antennal insertions separated by a median deep and marked groove. Interocular space narrower than the separation of the antennal insertions, with dots of rough appearance and white pubescence directed towards the eyes. Posterior part of the head with abundant punctuation marked and covered with a white pubescence facing forward. Vertex convex and clearly elevated above the upper level of the

eyes.

Antennae long, uniformly yellowish, exceeding the elytral apex from the last antennomere. Ratio: 13: 5: 23: 25: 26: 25: 26: 24: 23: 21: 31. 1st joint 1.6 times longer than wide, triangular, with thick points in the surface and covered with long and scattered yellowish pubescence; the rest of the joints with a thin and short yellow pubescence.

Pronotum light brown, 0.92 times longer than wide at the base, with very marked and dense dots. Pubescence long and clear spread over the entire surface, except in the disc which is a small, smooth and glabrous area. Anterior border narrow, dark, with two transverse ribs from one side to the other and slightly sinuous in the center; straight back edge with a width smaller than the width of the head. Scutellum rectangular slightly longer than wide, dark brown and sparsely dotted.

Elytra feebly chitinized; length 13.3 mm, width 5 mm; 2.66 times longer than wide at base. Light yellowish with slightly darkened suture. Glossy surface with thick dotted, scattered and weak disposition. Humeral angles rounded. Base of the elytra straight, with a small deep longitudinal concavity were slightly apparent nerve arises. Sides subparallel with a marked margin, slightly widened, dehiscent and rounded at the apex. Elytral pilosity yellowish, double, one short and thin uniformly distributed and other less dense, longer, erect and more abundant at the apex.

Legs long, thin, light brown. Tibiae straight and somewhat widened at apex, completely covered by a long and erect pilosity. Meso and metasternum the same color as the rest of teguments. Abdominal sternites dark brown with scattered punctuation and long yellowish pilosity.

Genital apparatus of the male: 9th sclerite (Fig. 4) with rounded and pubescent apex, also on inner face. Tegmen (Fig. 5) with the parameres separated at the base, narrow and slightly curved at the distal apex covered with erect setae; rounded *annellum*, wider than the distance between the outer edges of the parameres; wide and elongated *manubrium*. Penis (Fig. 6-7) 0.35 mm length, long, elongated and curved almost at an angle of 90° near apex; *tectum* with the apical portion acuminate, basal spatuliform apophysis and curved in the apex. Internal sac with chitinized flagellum.

Female: Unknown.

Etymology — The name of the new species refers to the region of origin of the specimens. *Šhaqūra*=*Saqura* was the name of the Sierra de Segura in the muslim period from the eighth to the thirteenth century, now currently integrated into the Natural Park Sierras de Cazorla, Segura y Las Villas (Jaén, SE Spain).

Variability — The variability observed affects different characters. The length ranges between 14.6 and 19.2 mm. and the width between 3.5 and 5.1 mm. The coloration of the teguments can vary from a brown-amber to straw-yellow. The silhouette of the cephalic contour behind the eyes (dorsal vision) varies more or less pronounced in the occipital region. The antennae exceed the body from the last joint (44 specimens) or from the penultimate joint (3 specimens). The glabrous area of the pronotum may extend more or less over the disc. In certain individuals the elytra are more or less rounded in the humeral region, the humeral depression is barely marked and the apex is not dehiscent.

Differential diagnosis — The new species is close to *V. fuentei* by sharing color, size, general body shape, short and thin labial palps, pilosity and type of punctuation. However, it shows clear differences in the shape of the head and in the male genitalia. The lateral view of the head shows clear differences between both species, in *V. fuentei* eyes and vertex just rise above the level of the front (Fig. 8), unlike in *V. saquranus* sp. nov., where the eyes clearly protrude from this profile and the vertex is visibly more pronounced and convex (Fig. 9). The biometric relationships: head length/eye length and head length/eye width, are also unambiguous diagnostic characters to separate both species, since in no case there is overlapping of the measured values in the abundant material studied. These relationships, which are listed in the following table, indicate a larger proportional size of the head of *V. fuentei* compared to *V. saquranus* sp. nov.

On *V. fuentei* the postocular sides of the head are parallel in large part until reaching the posterior angles (Fig. 10) where they are positioned almost at a right angle to the neck, while in *V. saquranus* sp. nov. the postocular sides of the head narrow gradually towards the neck (Fig. 11). In *V. fuentei* the back of the head is in appearance more globose and sub-circular while in *V. saquranus* sp. nov. the back of the head narrows towards the back and has a more triangular appearance.

The male genitalia allows an easy separation between both species; the penis of *V. fuentei* (Fig. 12) is slightly curved at the apex, while *V. saquranus* sp. nov. has a very pronounced curvature, almost 90°, at distal end (Fig. 7).

V. lucasi is also close to *V. saquranus* sp. nov. as they share certain characters such as coloration, size, length and shape of the labial palps, hairiness, stippling and morphology of the male genital apparatus with the curved shape of the penis (Fig. 13). However, it is distinguished externally by its more robust appearance with shorter legs (see key) and a rounder shape of the cephalic contour. The habitat of these two species is also different. The *locus typicus* of *V. lucasi* is located near Lucena (Córdoba province, Spain) characterized by low altitude (450 m., meso-mediterranean stage), geology, vegetation, soil types (gypsisols), land use mainly dedicated to the olive crops, features very different of the known distribution area of *V. saquranus* sp. nov., high altitude (above 1600 m, supra-mediterranean stage), mountain climate, great variety of soils (limestone regosols, calcium cambisols and rendzina with lithosol inclusions) (Gómez Mercado, 2011), clearly different vegetation and use of soil dedicated to high mountain pasture.

V. saquranus sp. nov. has a certain morphological affinity with *V. gomezi* although both taxa may be separated without difficulty due to the dark coloration of the teguments, a larger average size and shape of the genital apparatus of *V. gomezi* (Fig. 14).

Table 1. Biometric relationships of the head *Vesperus saquranus* sp. nov. and *Vesperus fuentei*.

	<i>V. saquranus</i> sp. nov.	<i>V. fuentei</i>
Head length/eye length	2'05 – 2'28	2'47 – 2'56
Head length/eye width	1'04 – 1'09	1'16 – 1'28

V. xatarti is clearly distinguished by the length of the proportionately longer elytra in this species, darkest coloration, generally larger size (reaching in some males 31 mm), 9th sclerite with the straight apical edge and more elongated aedeagus (Fig. 15), with a slightly marked medium bulb and the apex less curved than *V. saquranus* sp. nov.

Key to separate males from species group II (sensu Verdugo, 2008) of the genus *Vesperus* of the Iberian Peninsula

The species groups in the genus *Vesperus* proposed by Verdugo (2008) was established based on the relationships between the length and width of the head and pronotum. The first group characterized by length and width of head and pronotum of similar dimensions includes the followings species: *V. strepens* (Fabricius, 1792); *V. brevicollis* Graells, 1858; *V. bolivari* Oliveira, 1890; *V. sanzi* Reitter, 1895; *V. aragonicus* Baraud, 1964; *V. joanivivesi* Vives, 1998 and *V. barredai* Verdugo, 2009. Group II that includes species in which the head length and pronotum predominates over width is represented by the following taxa: *V. luridus* (Rossi, 1794); *V. xatarti*; *V. flaveolus* Mulsant & Rey, 1863; *V. ocularis* Mulsant & Rey, 1863; *V. conicicollis* Fairmaire & Coquerel, 1866; *V. creticus* Ganglbauer, 1886; *V. fuentei*; *V. nigellus* Compte, 1963; *V. serranoi* Zuzarte, 1985; *V. macropterus* Sama, 1999; *V. jertensis* Bercedo and Bahillo, 1999; *V. gomezi*; *V. lucasi* and *V. saquranus* sp. nov.

The followings keys has been elaborated partially modifying a previous one published by Barreda & Mejias García (2013) and allow the separation of *V. saquranus* sp. nov. from the Iberian species of group II.

- 1. Species with very close antennal insertions; inter-antennal space grooved longitudinally (Fig. 10-11). Internal sac of aedeagus provided with flagellum. 2
- Species with separate antennal insertions; concave inter-antennal space (Fig. 16-17). Internal sac of aedeagus without flagellum 6
- 2. Elytra very long, between 2.88 and 3.15 times longer than wide at the level of the humeral

- region *xatarti* (Fig. 2A)
- Elytra shorter, less than 2.80 times longer than wide at the level of the humeral region 3
- 3. Dark coloration. Very dark or black teguments; dark brown or almost black elytra . . . *V. gomezi* (Fig. 2B)
- Clear coloration. Yellowish or reddish brown teguments; yellowish elytra 4
- 4. Ratio anterior leg length/interocular distance between 9.58 and 12.07; ratio medium leg length/interocular distance between 10.16 and 13.31; Ratio posterior leg length/interocular distance between 11.21 and 14.36. Robust appearance and short legs *lucasi* (Fig. 3B)
- Ratio anterior leg length/interocular distance between 14.15 and 22.22; ratio medium leg length/interocular distance between 15.29 and 23.89; Ratio posterior leg length/interocular distance between 17.15 and 26.22. Slender appearance and long legs. /5 5. In lateral view the upper edge of the eyes barely exceeds the plane of the front; vertex not raised. Ratio head length/eye length between 2.47 and 2.56; ratio head length/eye width between 1.16 and 1.28. Penis slightly curved at apex *V. fuentei* (Fig. 3A)
- In lateral view the upper edge of the eyes clearly exceeds the plane of the front; raised and convex vertex. Ratio head length/eye length between 2.05 and 2.28; ratio head length/eye width between 1.04 and 1.09. Penis very curved at apex *V. saquranus* sp. nov. (Fig. 1)
- 6. Interocular distance wider than the separation of the antennal insertions (Fig. 16). 7
- Interocular distance narrower than separation of the antennal insertions (Fig. 17). *V. conicicollis*
- 7. Antennae not exceeding the elytral apex. Micro-rough head, thorax and elytra tegument that gives the body surface a matt or satin aspect. *V. serranoi*
- Antennae exceeding the elytral apex. Tegument smooth given a bright appearance to body

surface. *V. jertensis*

Distribution and habitat

The new species have been located only in two places, one in the immediate surroundings of the place of the so-called “pino de Felix Rodríguez de la Fuente” (1652 m) and the other one, inside the Campos de Hernán Perea (1609 m) (Fig. 14), both inside the Natural Park Sierras de Cazorla, Segura y Las Villas (Jaén prov.) (Fig. 18). The Campos de Hernán Perea, the locality in which have been captured the greatest part of the specimens, is the largest plateau in Spain with more of five thousand hectares and an average altitude of 1600-1700 m (Fig. 19).

The climate of this natural space is an oceanic-mediterranean type with mild summers. The average temperatures show records ranging between 20-25°C in summer, and extremely cold temperatures during the winter, sometimes below -13°C. Precipitation fluctuates between 600 and 1100 mm, reaching 1150 mm in the highest areas, with significant snowfall in the winter months.

The vegetal formations adapted to this extreme environment are the vegetation of the supra-mediterranean stage. The most developed community of this series is an open pine forest of *Pinus nigra salzmannii* (Dunal) Franco, of low coverage belonging to the *Junipero phoeniceae* - *Pinetum mauretanicae* association. Other small vegetal associations presents in the area are “piornales” (*Saturejo intricatae* Lange, *Velletum spinosae* Rivas Goday), and “esplegares” (*Saturejo intricatae* - *Echinopartetum boissieri* (Spach) Rothm.) and grasses (*Festuca hystrix* Boiss, *Stipa* sp.) (Gómez Mercado, 2011).

The capture of the specimens at lamp does not allow know exactly the habitat where the larvae of the new species lives. The locality of the Llanos de Hernán Perea is an area of intensely grazed grassland where trees and shrub vegetation are scarce and represented by few feet of *Pinus nigra salzmannii*, *Crataegus monogyna* Jacq., *Berberis hispanica* (Boiss.) Heywood and *Erinacea anthyllis* Link. Among the main herbaceous species there are *Koeleria vallesiana* (Honckeny) Gaudin, *Lagurus ovatus* L., *Plantago subulata granatensis* (Willk.) Malag., *Arenaria tetraquetra murcica* (Font Quer)

Favarger & Nieto Fel., *Teucrium* sp., *Thymus* sp., *Eryngium* sp., *Andryala* sp. and *Orobanche* sp. The locality of “pino Félix Rodríguez de la Fuente” is a glade in a forest of *Pinus nigra salzmannii*, accompanied by *Crataegus monogyna*, *Juniperus communis* L. *Prunus mahaleb* L. and *Erinacea anthyllis* with scarce herbaceous vegetation.

In some occasions some males of *Vesperus saquranus* sp. nov. has been found at the top of the grasses (Fig. 20) early in the night, behavior also observed in other *Vesperus* spp. and has been previously indicated by other authors (López Colón, 1997; Calvo Sánchez, 2007). This is probably a way to improve the reception of female pheromones to facilitate the search and encounter with females.

Notes on the type of *Vesperus fuentei*

Very recently Trócoli (2019) published some details about the typical locality and presence in Morocco of the species *Vesperus semiobscurus* Pic, 1921, which appears in the synonym list of *V. fuentei* proposed by Vives (2004) in the revision of the genus. As Vives was excessively concise in describing the labeling of the typical material consulted, seem appropriate to include in this work the photograph of the holotype of *V. fuentei* (Fig. 21) with all his labels (Fig. 22).

The type specimen comes from Ribas (de Jarama, Madrid Province), a town that currently corresponds to the municipality of Rivas-Vaciamadrid, and the collector was Aurelio Vázquez de Figueroa, a classic entomologist from Madrid who published several studies on Lepidoptera. This exemplar was sent to José María de la Fuente, who in turn sent it to Marcel Vauloger de Beaupré (Fuente, 1910) adding two labels, one in which appears the month of capture and considers it, with interrogation, as a new species and another in which a small description can be read.

The specimen remained in Vauloger collection's until its description by Pic in 1905 who respected the dedication to José María de la Fuente proposed by Vauloger.

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Figure 1. *Vesperus saquranus* **sp. nov.**, male, holotype

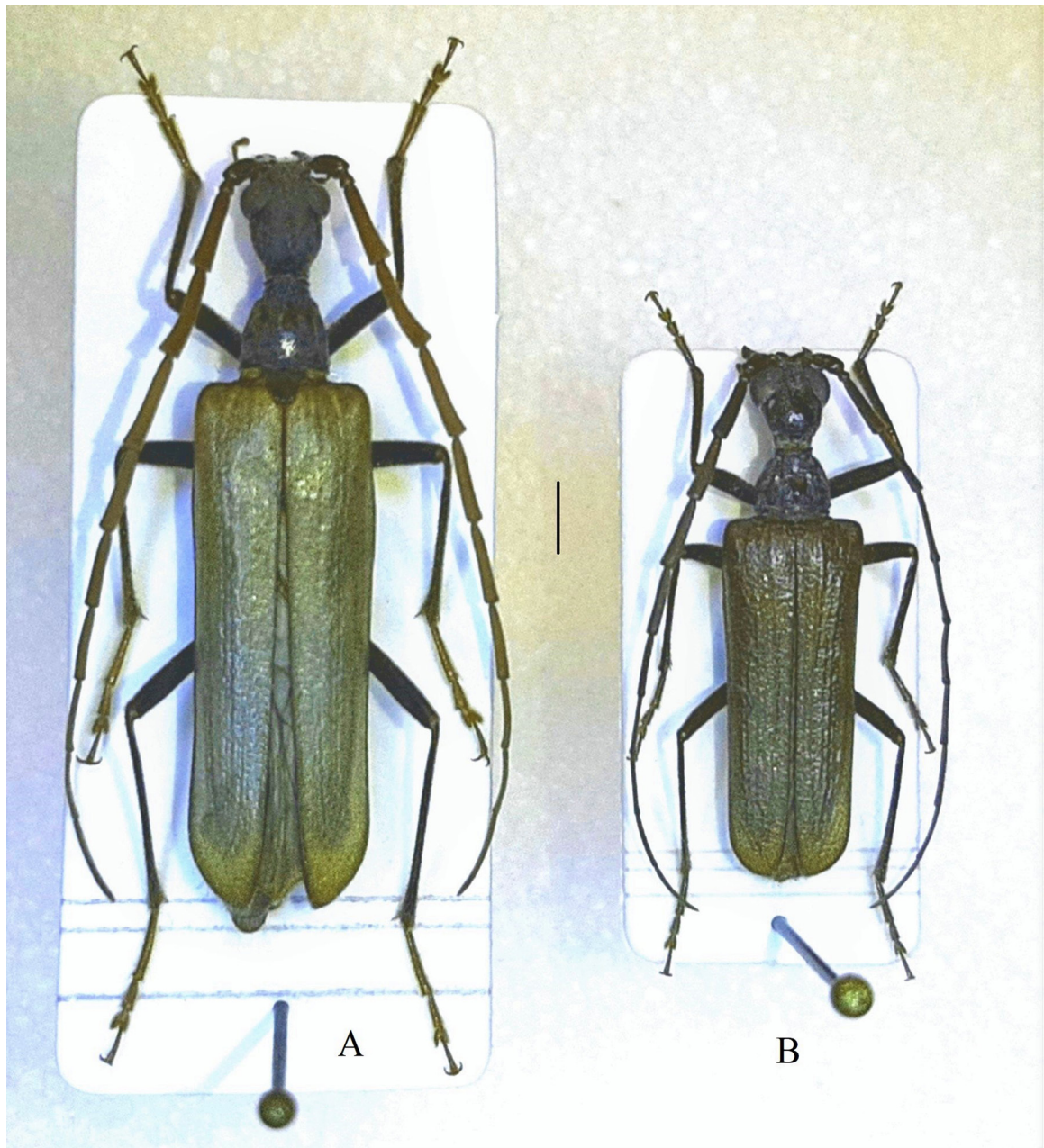


Figure 2. A – Habitus of *Vesperus xatarti*, B – Habitus of *Vesperus gomezi*. Scale bar 1.0 mm

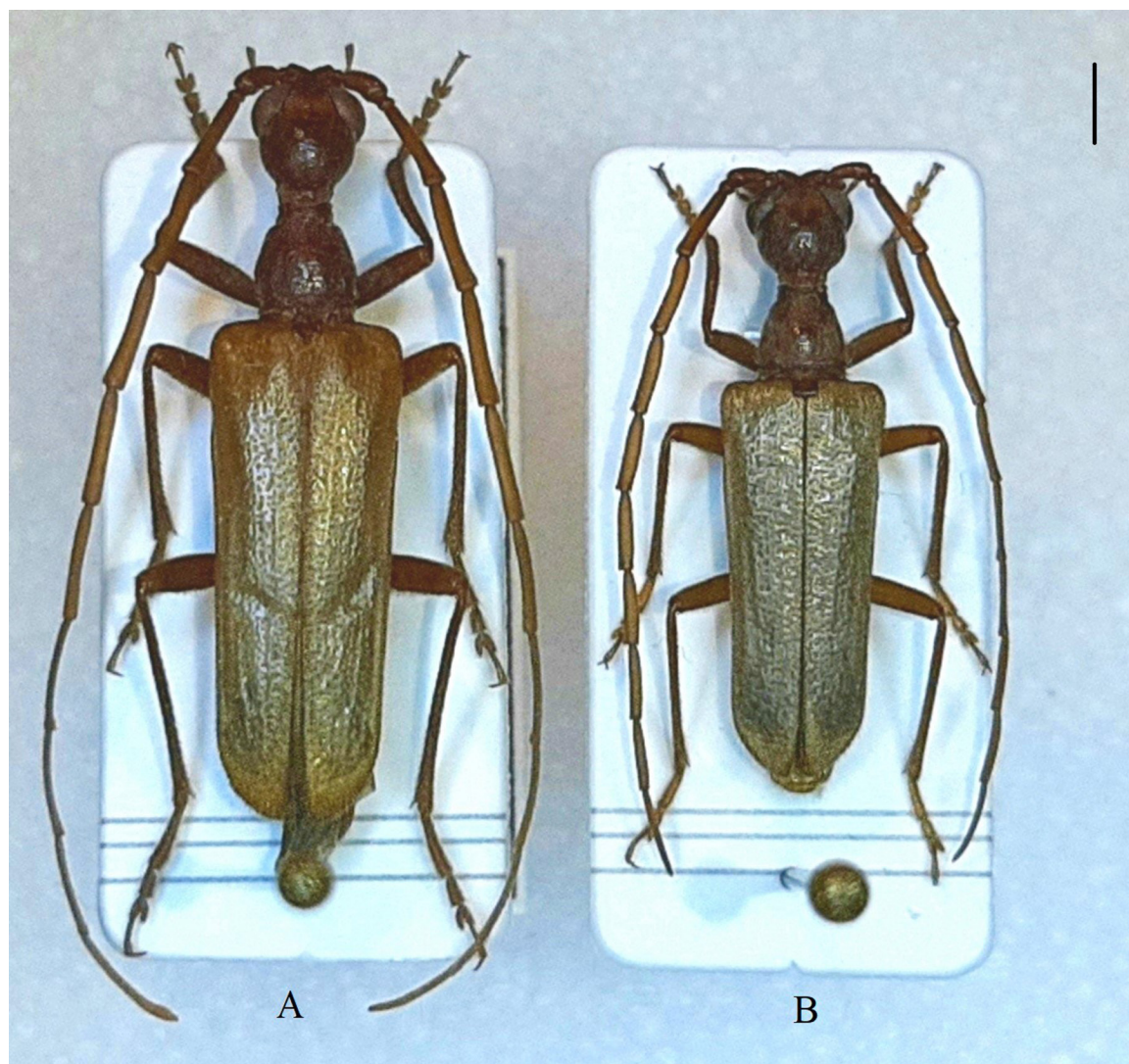


Figure 3. A - Habitus of *Vesperus fuentei*, B – Habitus of *Vesperus lucasi*. Scale bar 1.0 mm



Figure 4. *Vesperus saquranus* sp. nov. 9th sclerite.

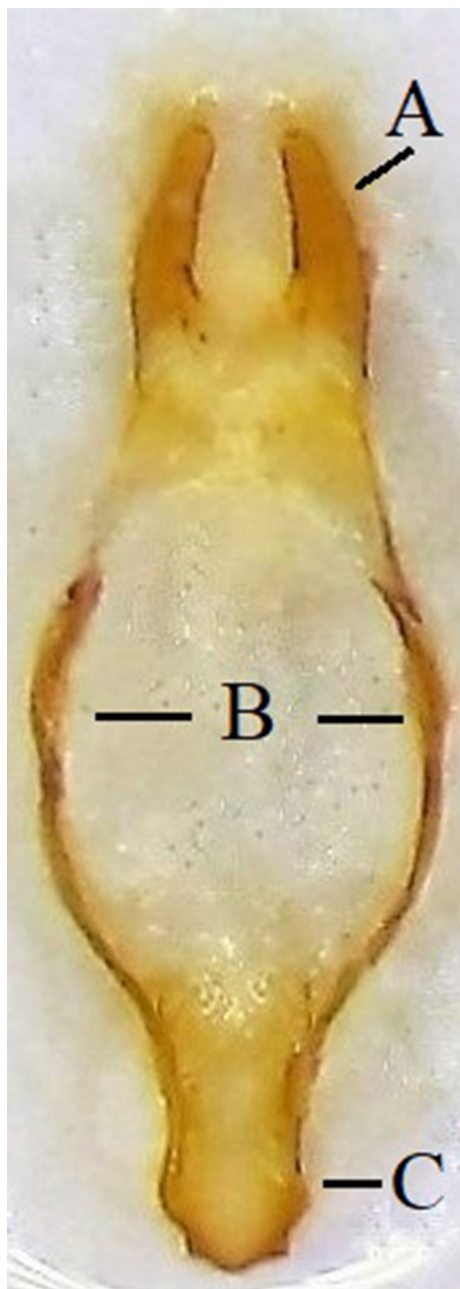


Figure 5. Idem, tegmen: A – parameres, B- annellum, C- manubrium



Figure 6 . Idem, penis: D- tectum, E- penis, F- apophysis, G- chitinized flagellum.

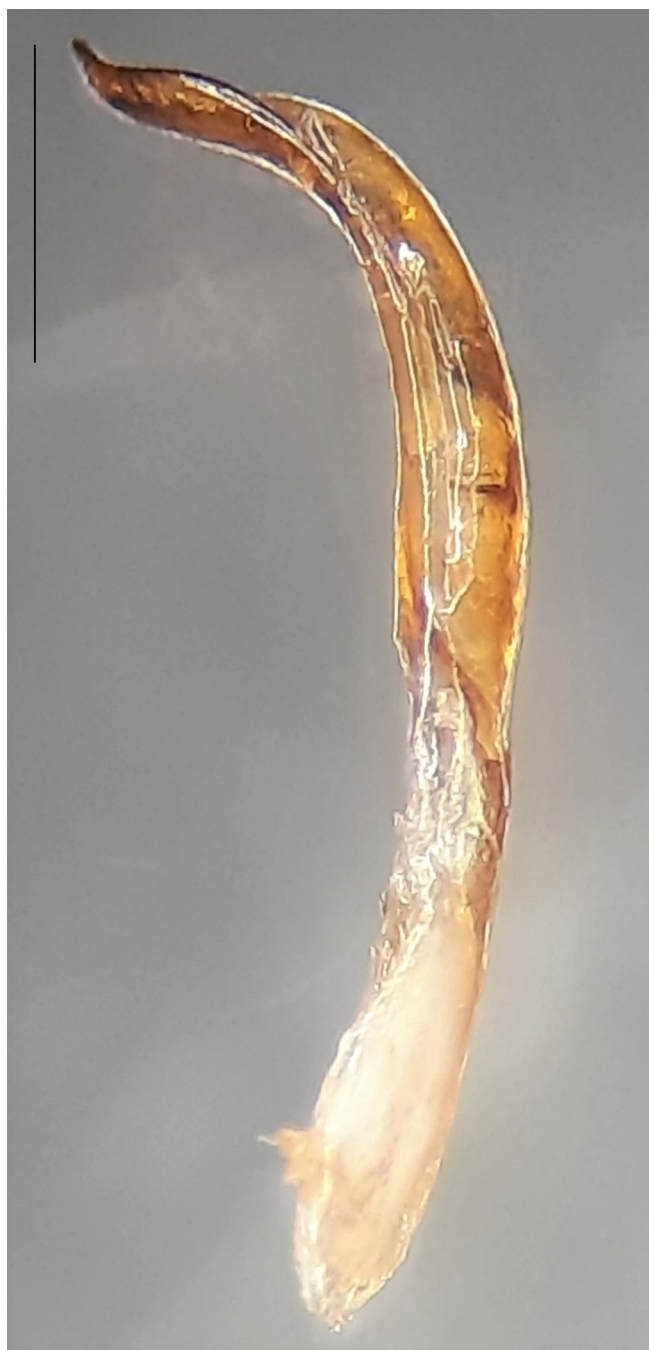


Figure 7. Penis of *Vesperus saquranus* **sp. nov.** Scale bar 0.1 mm



Figure 8. Head in lateral view of *V. fuentei*. Scale bar 0.1 mm.



Figure 9. Idem, *V. saquranus* sp. nov. Scale bar 0.1 mm



Figure 10. Head in dorsal view of *V. fuentei*.



Figure 11. Idem, *V. saquranus* sp. nov.



Figure 12. Penis of *V. fuentei*. Scale bar 0.1 mm.



Figure 13. Idem, *V. lucasi*. Scale bar 0.1 mm.



Figure 14. Idem, *V. gomezi*. Scale bar 0.1 mm



Figure 15. Idem, *V. xatarti*. Scale bar 0.1 mm



Figure 16. Head in dorsal view of *V. jertensis*.



Figure 17. Idem, *V. conicicollis*.



Figure 18. Distribution of *V. saquranus* sp. nov. on Natural Park Sierras de Cazorla, Segura y Las Villas, Jaén (SE Spain).



Figure 19. Area and aspect of the typical locality in the Campos de Hernán Perea.



Figure 20. Male of *Vesperus saquranus* sp. nov. on grass. Photo: Alberto Molinero.



Figure 21. Holotypus of *V. fuentei* © MNHN (Paris, France)



Figure 22. - Idem, labels © MNHN (Paris, France).