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A review of Portuguese fireflies with a description of a new species, *Lampyris iberica* sp. nov. (Coleoptera: Lampyridae)

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Abstract

A survey of the firefly fauna of Portugal is given using recent records. A new species, *Lampyris iberica* sp. nov., is described. It seems doubtful that *Lampyris noctiluca* (Linnaeus, 1767) occurs in Portugal. It is probable that old records of *L. noctiluca* from Portugal relate to the new species *L. iberica* sp. nov. *Lamprobizza mulsanti* Kiesenwetter, 1850 is recorded as new to the fauna of Portugal.

Key words: Lampyridae, Portugal, Iberian Peninsula, faunistic data, new species.

Resumen

Revisión de las luciérnagas de Portugal y descripción de una nueva especie, *Lampyris iberica* sp. nov. (Coleoptera: Lampyridae)

Se examina la fauna portuguesa de luciérnagas utilizando registros recientes. Se describe una nueva especie, *Lampyris iberica* sp. nov., mientras que se estima dudosa la presencia en Portugal de *Lampyris noctiluca* (Linnaeus, 1767). Probablemente los registros antiguos de *L. noctiluca* de Portugal se referían a la nueva especie *L. iberica* sp. nov. Se cita *Lamprobizza mulsanti* Kiesenwetter, 1850 como nueva para la fauna de Portugal.

Palabras clave: Lampyridae, Portugal, Península Ibérica, datos faunísticos, especie nueva.

Laburpena

Portugalgo ipurtargien azterketa eta espezie berri baten deskribapena, *Lampyris iberica* sp. nov. (Coleoptera: Lampyridae)

Portugalgo ipurtargien fauna aztertzen da, duela gutxiko datuak erabilita. Espezie berri bat, *Lampyris iberica* sp. nov., deskribatzen da eta zalantzarritzat jotzen da *Lampyris noctiluca* (Linnaeus, 1767) Portugalen bizi denik. Litekeena da Portugalgo *L. noctiluca*ren antzinako aipua *L. iberica* sp. nov. espezie berriarenak izatea. *Lamprobizza mulsanti* Kiesenwetter, 1850 lehenengo aldiz aipatzen da Portugalgo faunarako.

Gako-hitzak: Lampyridae, Portugal, Iberiar Penintsula, datu faunistikoak, espezie berria.

Introduction

To date, no comprehensive publication of Portuguese fireflies has been produced. Reports of Portuguese lampyrids are limited in the literature and are predomi-

nantly passing references in Lampyridae catalogues over fifty years old (Paulino d'Oliveira, 1893; Barros, 1927; Seabra, 1943). Geisthardt (2007b) incorporated these records in the catalogue of Palaearctic Coleoptera without having studied most of the material.

Based upon preliminary field work, this paper is the first part of a comprehensive survey of the fireflies of Portugal and includes faunistic and ecological data derived from recent collections.

To our knowledge, past studies of the Portuguese (Iberian) firefly fauna have been limited and the biodiversity remains relatively unexplored: To date only 7 species have been recorded from Portugal and Spain. In contrast, 12 taxa are recorded from France, 19 from Italy and 14 from Greece (Geisthardt, 2007b). The paucity of information and the need for more studies on the Iberian firefly fauna is highlighted in this paper by the report of two new species for the Portuguese fauna, one being new to science. In contrast, during a comparatively short period of time, about two decades, 16 new taxa have been described by the first author from Italy and Greece (Geisthardt, 1987, 1999, 2007a, 2007b). It is possible that there is another species in Portugal (Prof. A. Serrano, pers. comm., 2007); we have yet to verify this record.

Interestingly, one species of the Portuguese fauna, *Lampyris noctiluca* (Linnaeus, 1767), regarded in the past as a common Iberian species, has, on the whole, not been collected and validated in recent years from Portugal. However, the CIBIO (a private institution at the Porto University, Portugal) has recently recorded that *L. noctiluca* belongs to the Portuguese fauna (according to G. Figueira). The new species, *Lampyris iberica* sp. nov. superficially resembles *L. noctiluca* and it is plausible that this newly recorded species has been misidentified with *L. noctiluca* in the past. The CIBIO material will require re-examination and further studies are essential to clarify the status of *L. noctiluca* in Portugal. The first author has two males of *L. noctiluca* from Spain (without any data) [ex coll. A. Schenck (1803-1878)], but at present it seems doubtful if these specimens are correctly labelled.

Material and methods

In this article, with few exceptions, only recent collections have been taken into consideration. The field work has been conducted by G. Figueira and R. De Cock in 2006 and 2007. For the excursions in 2006 they focused on four Natural Parks and one National Park of Portugal: NP da Arrábida, NP da Serra de São Mamede, NP da Serra da Estrela, NP de Montesinho and NP da Peneda-Gerês (without any new result). NP Serra de São de Mamede was chosen in particular to find *Phosphaenopterus metzneri* Schaufuss,

1870, which is the only location in Portugal (near Portalegre) where it has been found only once. Although lampyrid species were observed here, *Phosphaenopterus metzneri* was not collected during the 2006 excursion. Excursions also took place during the First International Firefly Meeting at the Parque Biológico de Gaia in June 2007. Other excursions in 2006 and 2007 were planned by G. Figueira in several locations over Portugal. Collections were carried out at the end of June and beginning of July, *i.e.* the peak season for most adult lampyrids, for 2-3 hours after sunset, when adults generally show peak activity. To attract the males, green light emitting diodes (LEDs), 6V bulb lamps fitted with opaque yellow caps to temper the light and 25 mm green chemical glowstick breaklights (normally used for fishing) were used to attract flying adults. Males, females and larvae were also detected by luminous behaviour.

Digital images were taken using a Nikon Coolpix 4500[®] camera. Drawings were done using a drawing tube mounted on a Leitz stereoscopic microscope. The images and drawings are made by the first author.

Abbreviations: GF=Gonçalo Figueira; MG=Michael Geisthardt; RDC=Raphaël De Cock; NP=National/Nature Park.

Localities visited recently:

Arrábida (NP), 38° 27' N, 9° 1' W, 175 m a.s.l. Wide valley with an isolated mosaic landscape of grazed grasslands and grain fields, isolated trees, and relatively humid woodland within a setting of mountainous dry Mediterranean scrub and woodland, no open freshwater closer than 1 km. Weather during the collecting night: dry and warm (> 20 °C).

Avintes, Vila Nova de Gaia, 41° 6' N, 8° 33' W, 100 m a.s.l. Forest, dry vegetation. Weather during collecting: partly cloud, circa 18 °C, humid.

Casal do Rei, Serra da Estrela (NP), 40° 18' N, 7° 45' W, 375 m a.s.l. Steep wooded valley (mixed woodland and some eucalyptus trees), terrace vegetable gardens, vineyards along a river. Weather during the collecting night: Dry and warm (> 20 °C).

Coimbra, Lordemão, 40° 15' N, 8° 25' W, 130 m a.s.l. Pine forest, dry vegetation. Weather during collecting: clear sky, warm (> 20 °C), dry.

Covão de Ametade, Serra da Estrela, 40° 20' N, 7° 35' W, 1445-1545 m a.s.l. Amphitheatre-shaped circle of an old glacier habitat, isolated birchwood with large meadow clearings (former camp site) along a mountain brook and circa 2 km SE of Covão de Ametade; highland grasslands with highland brooks, near coniferous woodland. Weather during the collecting night: dry and warm (> 20 °C), clear sky.

Ericeira, Vila Nova de Talefe, 38° 57' N, 9° 24' W, 40 m a.s.l. Mediterranean scrubland mixed with agricultural land; dry vegetation. Weather during the collecting night: dry and warm (> 20 °C), clear sky.

Gaia, Biological Park, Vila Nova de Gaia, 41° 6' N, 8° 33' W, 50-60 m a.s.l. Dry to humid forest (coniferous on valley top, deciduous mixed with exotics, *e. g.* eucalyptus), towards a small river, extensive agriculture, humid vegetation. Weather during the collecting night: overcast, 18 °C, humid.

Lisboa, Monsanto Park, 38° 44' N, 9° 9' W, 150 m a.s.l. Steppe, dispersed shrubs and rocks. Very dry vegetation. Weather during collecting: clear sky, warm (> 25° C).

Lisboa, Palácio da Ajuda, 38° 42' N, 9° 11' W, 87 m a.s.l. Shrubs and dispersed trees near an urban complex, dry vegetation. Weather during the collecting night: dry and warm (> 20 °C), clear sky.

Marinha Grande, São Pedro de Muel, 39° 45' N, 8° 55' W, 120 m a.s.l. Sandy soil area about 1 km from the sea with *Pinus pinaster* and *Acacia longifolia*; very dry vegetation. Weather during the collecting night: dry and warm (> 20 °C), clear sky.

Montesinho (NP), Rio de Onor (Bragança), Montesinho (NP), 41° 56' N, 6° 37' W, 730 m a.s.l. Shrubland, forest and agriculture along a small river, ranging from dry vegetation (*Cistus* spp.) on valley tops to flooded grasslands (*Alopecurus* spp.) and deciduous trees (poplar, ash, willow) near the water. Weather during collecting: clear sky, warm (> 20 °C), dry.

Oeiras, Jamor, 38° 42' N, 9° 15' W, 35 m a.s.l. River margin, surrounded by dry steppes. Weather during the collecting night: dry and warm (> 20 °C).

Portalegre, Serra de Saõ Mamede (NP), 39° 17' N, 7° 25' W, 500 m a.s.l. Habitat along a mountain brook, changing from coniferous and dry open scrubland higher up, to rows of deciduous trees growing along a small river within an orchard pasture landscape further downstream. Weather during the collecting night: dry and warm (18 °C), clear sky.

Rio de Onor, Bragança, 41° 56' N, 6° 36' W, 700 m a.s.l.

Serra da Estrela, 40° 7' N, 8° 4' W, 1500 m a.s.l.

Sesimbra, Maçã, 38° 28' N, 9° 4' W, 100 m a.s.l. Cork oak forest (*Quercus suber*). Weather during the collecting night: dry and warm (> 20 °C), clear sky.

Sintra, SW Lisboa, 38° 48' N, 9° 22' W, 400 m a.s.l. Mountains, mixed forest, dry vegetation. Weather during collecting: clear sky, warm (> 20 °C).

Trofa, S Romão do Coronado, 40° 37' N, 8° 29' W, 40 m a.s.l. Agriculture fields with adjacent shrubs, humid vegetation. Weather during the collecting night: overcast, 18 °C, humid.

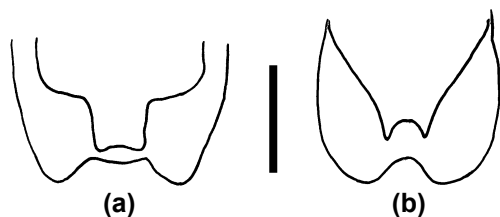


FIGURE 1. Tip of the male abdomen, seen from below, from: (a) *Lamprohiza paulinoi*; (b) *Lamprohiza mulsanti* (Scale bar = 0.5 mm).

Results

1. Faunistic data

Nyctophila reichii (Jacquelin du Val, 1859)

Rio de Onor, 02.vii.2006, at light, 5 ♂♂, RDC leg.; Rio de Onor, Camping place, 30.vi.2006, 1 ♂, GF leg.; Lisboa, Monsanto Park, 03.vii.2007, 2 ♂♂, 18.vii.2006, 1 ♀, GF leg.; Lisboa, 15.vi.2007, 1 ♂, 03.vii.2007, 3 ♂♂, 7.vii.2007, 1 ♀, 15.vii.2007, 1 ♂, GF leg.; Portalegre, 19.vii.2007, 1 ♂, GF leg.; Casal do Rei, 29.vi.2006, 1 ♀, RDC leg. [coll. MG]; Montesinho (NP), 1.vii.2006, 23:15 h, 1 ♂, GF leg.

Ecological note: In Rio de Onor and Portalegre this species was more prevalent at higher levels than at lower levels, suggesting this species may prefer dryer habitats than wetlands.

Remark: This species has been recorded from France, Spain, Portugal, Liechtenstein, Serbia, Montenegro and Turkey, exhibiting a somewhat unusual disconnected distribution; in Greece the ssp. *brullei* (Reiche, 1863) occurs. *Lamprohiza bicarinata* Mulsant & Revelière, 1860 described from Corsica and the var. *hispanica* E. Olivier, 1884, both recorded from Portugal and the latter described from Spain, are synonyms of *N. reichii* (McDermott, 1966; Geisthardt, 2007b).

Lamprohiza mulsanti Kiesenwetter, 1850

Gaia, Biological Park, vi.2007, 1 ♂, RDC leg.

Remark: This species has been described from the French Pyrenees and has been also recorded for Spain; new for Portugal. In contrast to *L. paulinoi* the males of *L. mulsanti* are nonluminous. In *L. mulsanti* the ventral surface of the thorax is brown and almost the same colour as the abdomen. In contrast, the ventral surface of the thorax in *L. paulinoi* is pale yellow to pink. The difference in pygidium morphology is described by Olivier (1884), and now illustrated in Fig. 1.

Lamprohiza paulinoi Olivier, 1884

Gaia, Biological Park, 28.vi.2007, 1 ♂, GF leg., vi.2007, 3 ♂♂, RDC leg.; Lisboa, Monsanto Park, 03.vii.2007, 1 ♂, GF leg.; Lisboa, iv.2007, 1 ♂, GF leg.

Note: Endemic species, has been described from Felgueira (= Felgueira) and Coimbra at a level of about

100–300 m a.s.l. The male from Gaia is only 8 mm in length although on average the males are 10–13 mm long. It is likely that this species also occurs in some parts of Spain, but to date there are no reports. As far as is known the female is not described to date. On a website [www.gobmallorca.com/forum/viewtopic.php?pid=2573] this species is also reported from Mallorca, but this is definitively not correct.

Phosphaenus hemipterus (Geoffroy, 1762)

Trofa, 31.v.2007, 1 ♂, 1 ♀, GF leg.; Avintes, 23.v.2007, 1 ♂, GF leg.; Gaia, Biological Park, 29.v.2007, 1 ♂, 2 ♀♀, GF leg., vi.2007, 1 ♂, 1 ♀, RDC leg.

Remark: A rare or overlooked species known from nearly the whole middle and south Europe, recorded also from Scandinavia, western Russia and Spain (De Cock, 2000). It is probably overlooked because the male is diurnally active, flightless and tracks the females by means of pheromones instead of light signals at night (De Cock and Matthysen, 2005). One male bore a large number of phoretic mites. The species is reported from Portugal as well as from Spain. The few locations previously known to the authors for Portugal are: Lagares, Penafiel (41° 7' N, 8° 22' W, ca. 175 m a.s.l.) (Barros, 1927); Cabeça (Parque Natural da Serra Estrela), 40° 19' N, 7° 44' W, 440 m a.s.l. (Grosso-Silva, 2002).

Luciola lusitanica (Charpentier, 1825)

Coimbra, 05.vi.2006, 1 ♂, 4.vi.2007, 1 ♂, 8.vi.2007, 1 ♂, 25.vi.2007, 1 ♂, vi.2007, 1 ♂, 7.vi.2006, 1 ♀, GF leg.; Sintra, 21.vii.2006, 1 ♀, 04.vii.2007, 1 ♂, 1 ♀, 14.viii.2007, 1 ♂, 1 ♀, GF leg.; Avintes, 22.vi.2007, 1 ♂, GF leg.; Lisboa, Palácio da Ajuda, no date, 1 ♂, GF leg.; Lisboa, Waterpark, 08.vii.2007, 2 ♀♀, GF leg.; Gaia, Biological Park, 30.v.2007, 2 ♂♂, 04.vi.2007, 1 ♂, GF leg., vi.2007, 1 ♂, RDC leg.; Ericeira, 09.vi.2006, 1 ♂, 16.v.2007, 1 ♂, 18.v.2007, 1 ♂, 22.vi.2007, 1 ♂, GF leg. 10.vi.2006, 1 ♂; Coimbra, 25.vi.2007, 1 ♂, GF leg.

Remark: A widespread species in southern Europe. Its distribution extends in the east to southern Russia and Ukraine. The extensive morphological variation is illustrated by the 10 synonyms for this species (Geisthardt, 2007b).

2. Description of a new taxon

Lampyrus iberica sp. nov.

Specimens examined: Holotype: ♂, Portugal, Rio de Onor, 01.vii.2006, GF leg. **Paratypes:** 5 ♂♂, same data as holotype; Rio de Onor, 01.vii.2006, 12 ♂♂, 1 ♀, RDC leg., 02.vii.2006, at light, 5 ♂♂, RDC leg.; Covão de Ametade, 30.vi.2006, 4 ♂♂, RDC & GF leg.; Casal do Rei, 29.vi.2006, at light between 22:00–23:00, 7 ♂♂, RDC leg.; Serra da Estrela (NP), 30.vi.2006, 2 ♂♂, RDC leg.; Ericeira, 22.vii.2006, 2 ♂♂, 14.vii.2007, 3 ♂♂, 21.vii.2007, 2 ♂♂, 22.vii.2007, 2 ♀♀, GF leg.; Coimbra, 6.vi.2007, 2 ♀♀, 25.vi.2007, 1 ♂, 28.vi.2007, 1 ♂, 29.vi.2007, 1 ♀, 30.vi.2007, 3 ♂♂, 29.vii.2007, 1 ♂, GF leg.; Coimbra, 25.vi.2007, 1 ♂, 27.vi.2007, 1 ♀, GF leg.; Sintra, 20.vi.2006, 1 ♀, 8.viii.2006, 1 ♀, vii.2007, 1 ♂, 1 ♀, 8.viii.2007, 1 ♀, 13.viii.2007, 1 ♂, 14.viii.2007, 2 ♂♂, [6.ix.2007, 1 ♂, completely destroyed, not in the type series], GF leg.; Oeiras, 9.vii.2007, 1 ♀, GF leg.; Avintes, 22.vi.2007, 2 ♂♂, GF leg.; Gaia, Biological Park, 24.vi.2007, 1 ♀, GF leg., vi.2007, 1 ♀, RDC leg.; Marinha Grande, 28.vii.2007, 1 ♂, GF leg.; Sesimbra, 07.vii.2007, 1 ♂, GF leg.; Portalegre, 28.vi.2006, 2 ♂♂, 27.vi.2006, 1 ♀, RDC leg.; Arrábida (NP), 26.vi.2006, 1 ♀, RDC leg.; Marinha Grande, camp site, 30.vii.2007, 3 ♂♂, GF leg.; Lisboa, Waterpark, 08.vii.2007, 1 ♂, GF leg.; Montesinho (NP), 1.vii.2006, 23:15 h, 1 ♀, GF leg.

Note: From Rio de Onor two larvae have also been collected, but a description is not included as little is known about the immature stages of *Lampyrus* and *Nyctophila*. Both genera have been detected sympatrically where the two can be putatively discriminated by the presence or absence of yellow spots on each posterior tergite corner (present in *Lampyrus* larvae). More material and detailed comparative studies with other known *Lampyrus* and *Nyctophila* larvae are required before a confirmed description can be presented.

Deposition of the types: The HT and some PT will be preserved in the Staatliches Museum für Naturkunde, Stuttgart, Germany. Paratypes will be also deposited in the collections of the authors as well as in museums in Belgium, England, and Portugal.

Remark: The females are not declared as paratypes.

Diagnosis: Length 13.5–14.0 mm, width 4.5 mm. Elytrae brown, with the suture, the apex and the marginal border near the end pale. Pronotum with two hardly visible transparent spots.

Description:

♂, length 13.5–14.0 mm, width (just behind shoulder) 4.5 mm.

The pronotum is much broader than long (width :

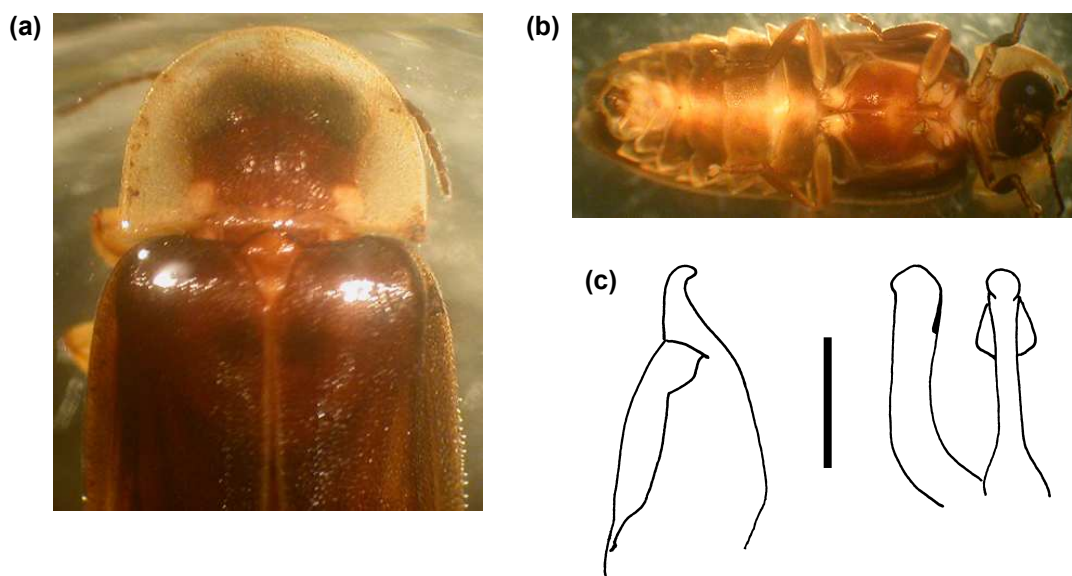


FIGURE 2. *Lamptyrus iberica* sp. nov. (♂): (a) Pronotum and base of elytra; (b) Ventral view; (c) Genitalia: Paramere, inside view (left) and medianlobus, lateral and dorsal view (right) (Scale bar = 0.5 mm).

length or $W:L = 1:0.57-0.63$), it is flat, the anterior border and the sides are nearly depressed. Anterior border semicircular, the sides are somewhat rounded towards the hind edges, nearly parallel. The hind margin is nearly straight, the hind edges are somewhat pointed posteriorly. There are two small and sometimes hardly visible transparent spots just behind the front edge (Fig. 2a). Pronotum pale to yellow-brown except the middle and posterior regions, which are brown. At the lateral posterior border between the pale and brown regions, just in front of the hind margin, on both sides there is a small, almost square, pale, unpunctured region (Fig. 2a) (these red-pinkish areas are only visible in living specimens or those that are preserved in alcohol; they disappear in pinned specimens). The pronotum is roughly but not very deeply punctured, the puncture on the posterior brown region weakened; sparsely covered with short, yellow adjacent hairs. The middle of the pronotum exhibits a distinct brown ridge reaching almost to the fore margin but fading out before the middle of the posterior region.

The scutellum (Fig. 2a) is slightly conical with the apex rounded or truncate, yellow-brown with the apex pale. Elytrae elongate, brown, the shoulders polished; suture and marginal border including apex small but

distinctly pale (Fig. 2a). In some specimens the marginal border is distinctly pale only in the last third. With two ridges, of which the outer one is distinct but does not reach the shoulder and becomes indistinct in the last third; the inner one is very indistinct and only visible in the first half. The elytrae are sparsely covered with short, yellow adjacent hairs.

Head black, with the clypeus and the labrum pale; mandibles brown at base, with a well defined and distinctly separated long tip, palpi brown.

Antennae relatively long reaching almost the first quarter of the elytrae, brown with the first antennomere sometimes indistinguishably paler; the proportions of the antennomeres are as follows: $1.00 : 0.48 : 0.80 : 0.80 : 0.72 : 0.60 : 0.60 : 0.48 : 0.60 : 0.48 : 0.64$. Some specimens have the second antennomere shorter.

Legs pale with the exception of the tarsi and the inner edge of the tibiae, which are brown (Fig. 2b) (the paratype from Covão de Ametade has an almost complete brown tibiae). First and last tarsomeres of the metatarsus equal in length, less than two times longer than fourth.

Prosternum nearly pale, meso- and metasternum yellow-brown, abdomen dark brown with variable pale parts, which are increasing towards the end.

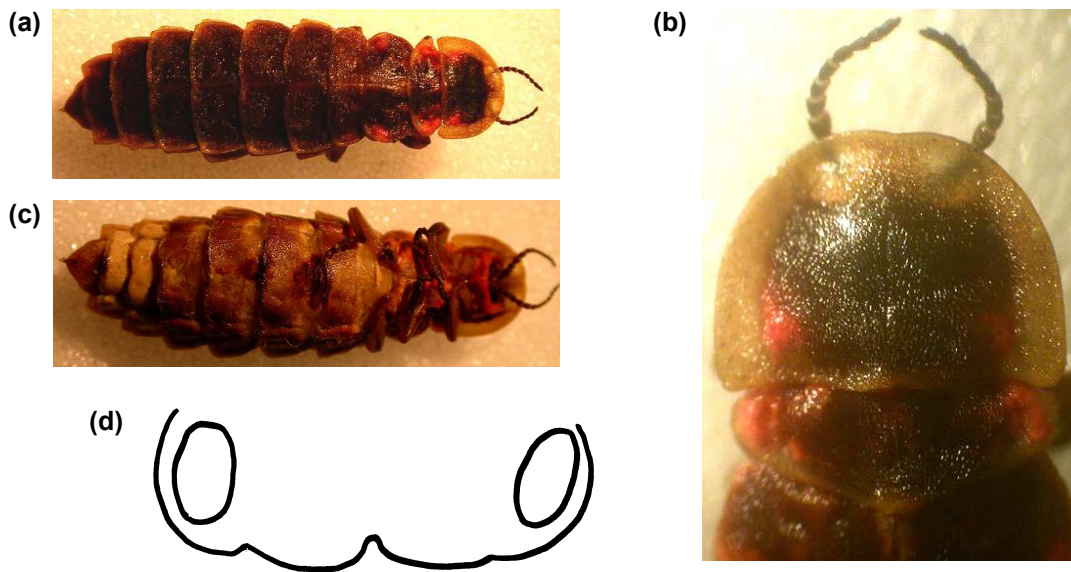


FIGURE 3. *Lampyris iberica* sp. nov. (♀): (a) Dorsal view; (b) Pronotum; (c) Ventral view; (d) Last sternite.

At least the first five sternites have a narrow pale line in the middle; in general the last sternite is yellow-brown to pale and bears a small roundish light organ near the middle of the marginal border (Fig. 2b). In some specimens the abdomen is almost completely pale and seldom entirely brown with very small pale regions (this brown colour may be the result of initial discolouration caused by impure alcohol). At least the last three hind margins of the sternites are slightly notched in the middle.

The light organs are hardly visible in dead males because of the pale sternites. The last sternite has two small, oval light organs each at the lateral border and near the hind margin of the penultimate sternite.

The pygidium is in general the same shape as in *L. noctiluca* but is different in colour. In *L. noctiluca* the pygidium is uniform in colour ranging from brown to black, in *L. iberica* sp. nov. a brown patch is only present in the middle, more or less extended but never reaching the lateral margins or the apex.

The aedeagus is very similar to that of *L. noctiluca*, but the apical «horn» of the paramere is much shorter, and the medianlobus (penis) is nearly straight and only curved near the basal part (Fig. 2c) (for the aedeagus of *L. noctiluca* see Geisthardt, 1985).

Description of the female:

Size: up to 25 mm (or more?) in length, and 6 mm in width. The size depends, as usual, on the larval development.

The habitus resembles that of all *Lampyris* females (Fig. 3a).

The head, like all *Lampyris* species, is concealed under the pronotum, the eyes are small. The filiform antennae are brown to black, the first to fourth (fifth) antennomere in general paler than the following and short. First antennomere three times longer than second, this one broader than long and broader than the followings. The proportions of the antennomeres are as follows: 1.00 : 0.33 : 0.66 : 0.66 : 0.50 : 0.50 : 0.66 : 0.50 : 0.50 : 0.50 : 0.66.

The pronotum is broader than long ($W : L = 1 : 0.73$); yellow-brown with a large blackish region in the middle; the posterior edges of this region are dominated by a red-pink spot (Fig. 3b). The anterior margin is semicircular, the lateral margins are slightly rounded towards the hind edges, which are pointed backward slightly. Just after the anterior margin there is a short ridge in the middle that changes within the dark region into a poor furrow (Fig. 3b).

The mesonotum is as broad as the pronotum, dark

Taxa	Remarks
<i>Lampyris noctiluca</i> (Linnaeus, 1767)	no recent records
<i>Lampyris iberica</i> sp. nov.	new species (present paper)
<i>Nyctophila reichii</i> (Jacquelin du Val, 1859)	a few recent records
<i>Pelania mauritanica</i> (Linnaeus, 1767)	no recent records
<i>Lamprohiza mulsanti</i> Kiesenwetter, 1850	new for the fauna of Portugal
<i>Lamprohiza paulinoi</i> Olivier, 1884	a few recent records
<i>Phosphonopterus metzneri</i> Schaufuss, 1870	no recent records
<i>Phosphaenus hemipterus</i> (Geoffroy, 1762)	only some new records for Portugal
<i>Luciola lusitanica</i> (Charpentier, 1825)	seems to be abundant in coastal regions

TABLE 1. Updated checklist of Portuguese fireflies.

brown with pinkish lateral margins. No elytra are present (Figs. 3a-b).

The metanotum is as broad as the mesonotum but somewhat longer, the sides are rounded, with the hind edges more or less pink (Fig. 3a).

The abdominal tergites are brown, with the lateral and hind margins somewhat paler.

The pro- and mesosterna and -pleura (the entire ventral part) are predominantly pink; the ventral part of the metathorax is only partly pink.

The abdominal sternites 1 to 5 are yellow, brown or completely dark brown but with a very variable colour pattern. Sternites 6 and 7 completely covered by the light organs (Fig. 3c); the last (8) sternite with a small light organ at each side. For the shape of the sternite 8 see Fig. 3d. The last sternite of *L. noctiluca* (♀) has been figured by De Cock and Geisthardt (2007).

The legs are short and, as usual, less developed than in males. The coxae and femora are pale yellow brown, the latter with indistinct brownish parts. The tibiae and tarsae are increasing dark brown.

Etymology: The name refers to the area of the Iberian Peninsula.

Ecology: The new species has been proofed to date from 38° to about 41° N, from sea level up to about 1700 m a.s.l. As far as we know and have observed, this species seems to be more dependent on humid habitats, e.g. along waterbodies accompanied by vegetation. In contrast, *N. reichii* (males) were more abundant higher up the valleys where the habitat changes into Mediterranean scrubland.

Behavioural notes: The females glow in a similar way, in the same (micro)habitat and during the same period at night as those of *L. noctiluca* in order to

attract a mate. Similarly, males only glow if disturbed and no luminescence was observed in flying males. Interestingly, several males of *L. iberica* **sp. nov.** were also found attached to a *N. reichii* female. The luminescent display and the light organ external morphology of both genera appear very similar. This might indicate that *Lampyris* and *Nyctophila*, occurring sympatrically, may be unable to distinguish between females ultimately leading to mismatches and unsuccessful mating. Another interesting field observation in this context was that the smaller *L. iberica* **sp. nov.** males tend to mount *N. reichii* males when crawling in high numbers around the light lures. However, this resembles a competition strategy observed in other lampyrid species with different sized males in which smaller males win during scramble competitions (in so called «dove knots») because of their high mobility (Vencl and Carlson, 1998). However, this is the first report of interspecies scramble competition in Lampyridae.

Comparison with *L. noctiluca*:

To date, only one *Lampyris* species, *Lampyris noctiluca*, has been recorded from Portugal; a new species is added in this paper (Table 1) and compared with *L. noctiluca*. The male of the new species superficially resembles the widespread European *L. noctiluca*, but differs as follows: In *L. noctiluca* the general colour is dark brown to nearly black, and the suture and the marginal border of the elytra are always monochromatic; the transparent spots of the pronotum are totally lacking. In *L. iberica* **sp. nov.** the pronotum is much broader (W : L = 1 : 0.57–0.63) than in *L. noctiluca* (W : L = 1 : 0.75–0.8). The first antennomere in the ♂♂ of *L. noctiluca* is about three times longer than the second, in *L. iberica* **sp. nov.** only two times longer. The aedeagi of both species are very similar, but differ in some features.

Also the female superficially resembles *L. noctiluca*.

Both females have neither remnants of elytra nor wings. But the female of the new species *L. iberica* sp. nov. can be easily distinguished from *L. noctiluca* by a different colour pattern, particularly by pink spots on the pronotum and by the paler colour of the abdominal sternites. Furthermore, the last sternite is of different shape (Fig. 3d) (for *L. noctiluca*, compare De Cock and Geisthardt, 2007). The light organs in *L. iberica* sp. nov. are more developed than in *L. noctiluca*.

It was surprising that all the material recently collected that was initially regarded as *L. noctiluca* turned out, upon detailed morphological examination, to be *L. iberica* sp. nov. As such we anticipate that previous records of *L. noctiluca* from Portugal refer to the new species *L. iberica* sp. nov. that has been overlooked in the past.

References

- BARROS J. 1927. Coleopteros novos para a fauna portuguesa. *Broteria* **24**: 141-143.
- DE COCK R. 2000. Rare, or simply overlooked? Practical notes for survey and monitoring of the small glow-worm *Phosphaenus hemipterus* (Coleoptera: Lampyridae). *Belgian Journal of Zoology* **130**(2): 93-101.
- DE COCK R, GEISTHARDT M. 2007. Description of the adult female and larval stages of *Lampyris sardiniae* Geisthardt, 1987 (Coleoptera: Lampyridae). *Entomologische Zeitschrift* **117**(3): 99-102.
- DE COCK R, MATTHYSEN, E. 2005. Sexual communication by pheromones in a firefly, *Phosphaenus hemipterus* (Coleoptera: Lampyridae). *Animal behaviour* **70**(4): 807-818.
- GEISTHARDT M. 1985. Materialien zur Revision der Gattung *Lampyris* Müller 1764. II. Zur Kenntnis einiger europäischer und mediterraner Arten (Insecta: Coleoptera: Lampyridae). *Senckenbergiana biologica* **65**(3/6): 279-294.
- GEISTHARDT M. 1987. Materialien zur Revision der Gattung *Lampyris* Müller 1764. III. Bekannte und neue Arten der westmediterranen Inseln und Italiens (Coleoptera: Lampyridae). *Mitteilungen des Internationalen entomologischen Vereins* **11**(4): 89-110.
- GEISTHARDT M. 1999. Neue paläarktische Lampyridae und Anmerkungen zu bekannten Arten (Coleoptera). *Mitteilungen des Internationalen entomologischen Vereins* **24**(3/4): 95-109.
- GEISTHARDT M. 2007a. A new polytypic *Lampyris* from Italy: *Lampyris vesuvius vesuvius* sp. n. and *Lampyris vesuvius insularis* ssp. n. (Coleoptera Lampyridae Lampyridae) (Pp.: 185-190). In: Nardi G, Vomero V (Eds.). *Artropodi del Parco Nazionale del Vesuvio: ricerche preliminary. Conservazione Habitat Invertebrati*, 4. Cierre ed. Verona.
- GEISTHARDT M. 2007b. Lampyridae (Pp.: 225-234). In: Löbl I, Smetana A (Ed.). *Catalogue of Palaearctic Coleoptera, Vol. 4*. Apollo Books. Stenstrup.
- GROSSO-SILVA JM. 2002. Registos interessantes de coleópteros (Insecta, Coleoptera) para Portugal (3a nota). Primeiro registo Ibérico de *Pediacus dermestoides* (Fabricius, 1792) (Cucujidae). *Boletín de la Sociedad Entomológica Aragonesa* **31**: 49-54.
- MCDERMOTT F. 1966. *Coleopterorum Catalogus. Supplementa* [Steel W (Ed.)], pars 9, Lampyridae (2. ed.). 's-Gravenhage.
- OLIVIER E. 1884. Essai d'une revision des espèces européennes & circuméditerranéennes de la famille des Lampyrides. *L'Abeille, Journal d'Entomologie* **22**(4. Sér. -T. IV): 1-55, 1-4 (Notes compl.).
- PAULINO D'OLIVEIRA M. 1893. *Catalogue des insectes du Portugal*. Coimbra.
- SCHAUFUSS L. 1870. *Phosphaenopterus*. Nov. gen. Malacodermata. *Nunquam Otiosus* **1**[1870-1871]: 60-61.
- SEABRA DE A. 1943. Contribuições para o inventário da fauna lusitânica. Insecta Coleoptera. *Memórias e estudos do Museu Zoológico da Universidade de Coimbra* **142**: 1-153.
- VENCL FV, CARLSON AD. 1998. Proximate mechanisms of sexual selection in the firefly *Photinus pyralis* (Coleoptera: Lampyridae). *Journal of Insect Behavior* **11**(2): 191-207.

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