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FIRST RECORDS OF SOME SPIDERS (ARACHNIDA: ARANEAE) FROM LA PALMA (SPAIN: CANARY ISLANDS)

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Abstract: A small number of spiders was collected on the island of La Palma in the course of a taxonomic survey. As a result, we report several faunistic additions at different scales: *Pelecopsis inedita* (O. Pickard-Cambridge, 1875), is a first record from Macaronesia, *Zelotes manzae* (Strand, 1908), *Haplodrassus dalmatensis* (L. Koch, 1896), *Xysticus canariensis* (Wunderlich, 1987), *Hypsosinga albovittata* (Westring, 1851), *Pellenes geniculatus* (Simon, 1868) and *Styloctetor romanus* (O. Pickard-Cambridge, 1873) are first records from La Palma. In addition, a redescription of *Oxyopes kraepelinorum* Bösenberg, 1895 is herein presented.
Key words: Araneae, distribution, Macaronesia, Spain, Canary Islands.

Primeros registros y actualización de la distribución conocida de algunas especies de arañas (Arachnida: Araneae) de La Palma (Islas Canarias, España)
Resumen: Una pequeña cantidad de arañas fue colectada en la isla de La Palma en el transcurso de un muestreo taxonómico. Como resultado, se citan varias adiciones a diferentes escalas: *Pelecopsis inedita* (O. Pickard-Cambridge, 1875) es un primer registro de la Macaronesia, *Zelotes manzae* (Strand, 1908), *Haplodrassus dalmatensis* (L. Koch, 1896), *Xysticus canariensis* (Wunderlich, 1987), *Hypsosinga albovittata* (Westring, 1851), *Pellenes geniculatus* (Simon, 1868) y *Styloctetor romanus* (O. Pickard-Cambridge, 1873) son primeros registros de La Palma. Además, se redescribe *Oxyopes kraepelinorum* Bösenberg 1895.
Palabras clave: Araneae, distribución, Macaronesia, España, Islas Canarias.

Introduction

The Canary Islands are a volcanic archipelago situated 100 km west to the North African West coast (Fig. 1). The archipelago is composed of seven main islands with differential geological age (Fernández-Palacios *et al*., 2007) and with high habitat diversity including arid lowlands, humid subtropical forests and alpine zones (Arnedo *et al.*, 1996; Roca-Cusachs & Goula, 2016).

La Palma, together with El Hierro and La Gomera, is situated in the western group of islands, and is one of the youngest islands of the archipelago, with a geologic age of approximately 2 million years ago (Anguita & Hernand, 1975, 2000; Carracedo *et al.*, 2001)

The first faunistic studies in the Canary Islands concerning spiders were made by Schmidt (1968, 1973, 1975a, 1975b, 1975c, 1975d, 1976, 1977, 1981, 1982) and Wunderlich (1987 & 1992). These initial studies were mainly taxonomic findings, but opened the way for comprehensive revisions of speciose endemic taxa, such as the genera *Dysdera* Latreille, 1804 or *Pholcus* Walckenaer, 1805*,* (ex: Arnedo *et al.,* 1996; Arnedo & Ribera 1997a, 1997b; Dimitrov & Ribera, 2007), which included the attempt to understand the phylogenetic patterns of these genera, an aspect deepened by recent molecular ecology studies (ex: Bidegaray-Batista *et al.*, 2007; Macías-Hernández *et al.*, 2008). Still, it is not hard to find new species nowadays in this region (Macías-Hernández *et al.,* 2010, Wunderlich, 2011), with rates of 20 to 200 species per decade (Izquierdo *et al.,* 2004; Borges *et al.,* 2005, 2008). These rates show us that the knowledge of the arthropod diversity is still far from complete as new species or records of previously unrecorded species remain to be accounted for.

Methods

The specimens were collected during two different sampling periods: in November 2013, pitfall traps were placed in three different sites, and in March of 2017, net sweeping and direct hand collection in 10 different random localities was performed (Fig 1). The spider specimens were later fixed in 70% ethanol and deposited in the author's personal collection. All specimens were collected and kindly ceded by Marcos Roca-Cusachs.

Identification of the spiders was made with a LEICA MZ16A stereoscopic microscope and the literature of the multiple taxonomic works made with the Macaronesian spider fauna (Bösenberg, 1895; Denis, 1941; Schmidt, 1968, 1977 & 1982; Schmidt & Krause, 1996; Wunderlich, 1987, 1992, 1995a, 1995b; Platnick & Murphy, 1996). The illustrations were made with a camera lucida.

Results

I. Faunistics

A total of 106 individuals were identified belonging to 27 different species in 16 families. Seven of these species are a first record for La Palma: *Zelotes manzae* (Strand, 1908), *Haplodrassus dalmatensis* (L. Koch, 1896), *Xysticus canariensis* (Wunderlich, 1987), *Hypsosinga albovittata* (Westring, 1851), *Pellenes geniculatus* (Simon, 1868), *Styloctetor romanus* (O. Pickard-Cambridge, 1873) and *Pelecopsis inedita* (O. Pickard-Cambridge, 1875) being the latter a first record for the Macaronesian region.

As the object of this paper is neither to compare the different sampling techniques nor to compare the different species captured in the different years but just to highlight the new records for La Palma. All the specimens are accounted for in Table I.

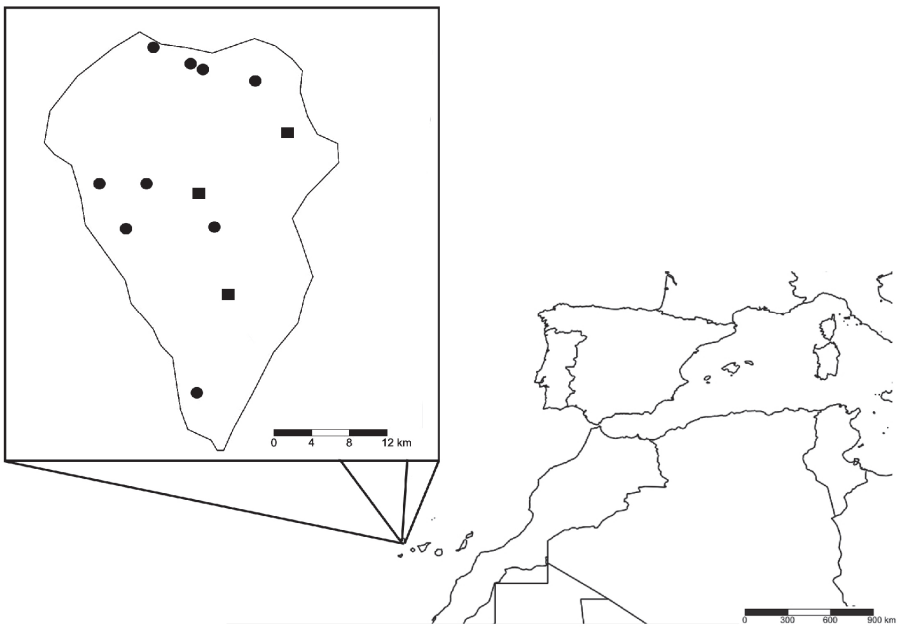


Fig. 1: Map of La Palma with its localization in the Canary Islands. Black squares: sample sites of 2013; black circles: sample sites of 2017.

Table I: List of species identified. Black dots: endemic species in the Canary Islands; white dots: new records for the Canary Islands.

Araneidae		
Araniella maderiana (Kulczyński, 1905)		
Hypsosinga albovittata (Westring, 1851)		○
Mangora acalypha (Walckenaer, 1802)		
Neoscona sp.		
Clubionidae		
Clubiona pseudominor Wunderlich, 1987	●	
Dysderidae		
Dysdera calderensis Wunderlich, 1987	●	
Gnaphosidae		
Haplodrassus dalmatensis (L. Koch, 1866)		○
Setaphis gomerae (Schmidt, 1981)	●	
Zelotes manzae (Strand, 1908)	●	○
Linyphiidae		
Agyneta fuscipalpa (C. L. Koch, 1836)		
Pelecopsis inedita (O. Pickard-Cambridge, 1875)		
Styloctetor romanus (O. Pickard-Cambridge, 1875)		○
Tenuiphantes tenuis (Blackwall, 1852)		
Lycosidae		
Alopecosa canaricola Schmidt, 1982	●	
Oecobiidae		
Oecobius navus Blackwall, 1859		
Oecobius similis Kulczyński, 1909		
Oxyopidae		
Oxyopes kraepelinorum Bösenberg, 1895	●	
Philodromidae		
Pulchellodromus wunderlichi (Muster & Thaler, 2007)	●	
Pisauridae		
Pisaura miriabilis (Clerck, 1757)		
Salticidae		
Cyrba algerina (Lucas, 1846)		
Pellenes geniculatus (Simon, 1868)		○
Sparassidae		
Olios canariensis (Lucas, 1838)	●	
Theridiidae		
Steatoda sp.		
Theridion musivivum Schmidt, 1956		
Thomisidae		
Thomisus onustus Walckenaer, 1805		
Xysticus canariensis (Wunderlich, 1987)	●	○
Xysticus verneaui Simon, 1883		
Uloboridae		
Uloborus walckenaerius Latreille, 1806		
Zoropsidae		
Zoropsis rufipes (Lucas, 1838)		

Family ARANEIDAE

Hypsosinga albovittata (Westring, 1851): This widespread species can be found in Europe, North Africa, Near East, Turkey, Caucasus and Central Asia (World Spider Catalog 2018). In the Canary Islands, it is known from El Hierro, La Gomera and Tenerife (Oromí *et al.,* 2004). Therefore, it is not surprisingly found in La Palma. It is the only representative species of this genus in the islands. In addition to the genitalic characters we observed, the colour pattern of the abdomen makes it easy to recognize this species.

Family GNAPHOSIDAE

Haplodrassus dalmatensis (L. Koch, 1896): This species is widespread in Europe (Netwing *et al.,* 2017) and has a distribution from Russia to North Africa, reaching Ethiopia (World Spider Catalog, 2018). In the Canary Islands, was cited in one of the most eastern islands, Fuerteventura (Oromí *et al.,* 2004). With the record of one male of this species its distribution is now enlarged to the western end of the archipelago.

Zelotes manzae (Strand, 1908): This species is endemic from the Canary Island and was cited in the island of Tenerife and Gran Canaria (Wunderlich, 2011). The male was undescribed until 2011 (Wunderlich). In the locality of La Cumbrecita, nine females and four males were found. The male is easily recognized by the large and distally bend tibial apophysis (Fig. 2B) as well by the large lateral outgrowth of the embolus (Wunderlich, 2011) (Fig. 2A). As the same author cited, the epigyne is also different from the other subterraneus-group species (Fig. 2C). Here the vulva has been illustrated for the first time (Fig. 2D).

Family LINYPHIIDAE

Pelecopsis inedita (O. Pickard-Cambridge, 1875): this species is it found in the Mediterranean region (Netwing *et al.*, 2017, Bosmans & Abrous, 1992). Thus, the presence of this species represents a first record for the Macaronesia. The male of this species presents a modified prosoma with a cephalic

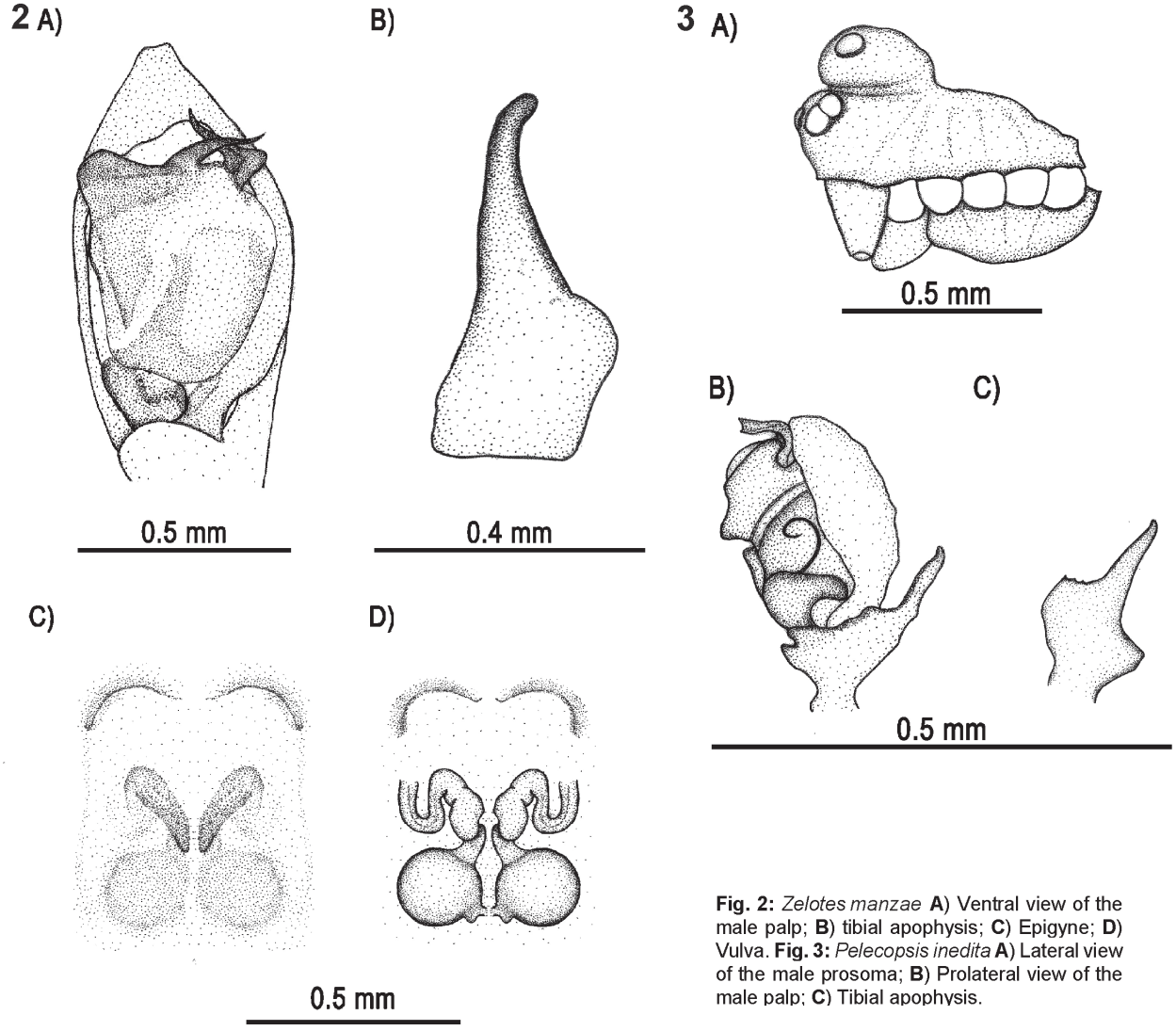


Fig. 2: *Zelotes manzae* **A**) Ventral view of the male palp; **B**) tibial apophysis; **C**) Epigyne; **D**) Vulva. **Fig. 3:** *Pelecopsis inedita* **A**) Lateral view of the male prosoma; **B**) Prolateral view of the male palp; **C**) Tibial apophysis.

protuberance like other members of its genus (Fig. 3A). The male is easily recognized by the small dorsal scutum and the male palp (Fig. 3B) with the straight antero-dorsal apophysis of the palpal tibia (Bosmans & Abrous, 1992) (Fig. 3C).

Styloctetor romanus (O. Pickard-Cambridge, 1873): This species is known from Europe, North Africa, Turkey, Caucasus, Russia (Europe to Far East), Central Asia, China (World Spider Catalog 2018). In the Canary Islands, the presence of this species is confirmed in the islands of El Hierro, Gran Canaria, Fuerteventura and Lanzarote and it is considered doubtful in La Gomera and Tenerife (Oromí *et al.,* 2004). We now enlarge the known distribution of *S. romanus* in the archipelago.

Family SALTICIDAE

Pellenes geniculatus (Simon, 1868): The distribution of *P. geniculatus* reaches from southern Paleartic to Africa (World Spider Catalog 2018). In the Canary Islands, it was cited from the islands of La Gomera and Tenerife. The female of this species was found in Garafia.

Family THOMISIDAE

Xysticus canariensis (Wunderlich, 1987): This species is known from La Gomera and El Hierro (doubtful record, Oromí *et al.,* 2004). It is one of the seven endemic *Xysticus* of the Canary Islands. One male was found in Cubo de Galga and one female in Garafia. The embolus of the male palp presents a lump and a bended border. Since its description in 1987 by Wunderlich no other taxonomic information was provided for this species, but our specimens are according to the description of Wunderlich.

II. Taxonomy

The species *Oxiopes kraepelinorum*, endemic of the archipelago, is distributed across all the islands. However, since its description in 1895 by Bösenberg no other taxonomic information has been recorded. For this reason, a redescription of the species was made.

Family Oxyopidae Thorell, 1870

Genus Oxyopes Latreille, 1804

Oxyopes kraepelinorum Bösenberg, 1895
Fig. 4A, 4B

MATERIAL EXAMINED: 1♀, El Paso, Virgen del Pino, La Palma. 22-28th March 2017. Roca-Cusachs leg. This specimen is deposited in the Centre of Animal Biodiversity Resources (CRBA, formerly Museum of Zoology) in the Faculty of Biology, University of Barcelona under the code CRBA-77885.; 1♂, El Paso, Virgen del Pino, La Palma. 22-28th

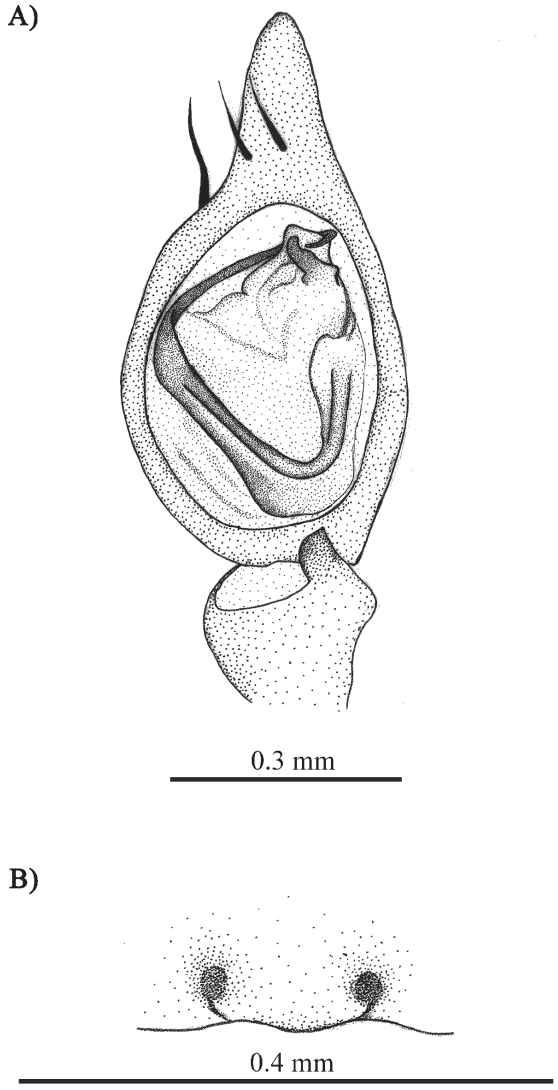


Fig. 4: *Oxyopes kraepelinorum* **A**) Ventral view of the male palp; **B**) Epigyne.

March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77886; 1 juv., El Paso, Virgen del Pino, La Palma. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77887; 1 juv., El Paso, Virgen del Pino, La Palma. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77888; 1 juv., El Paso, Virgen del Pino, La Palma. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77889; 1♂ sub., Barranco de las angustias, Puerto de Tazacorte. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77890; 1 juv. Barranco de las angustias, Puerto de Tazacorte. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77891; 1♂ sub. Laguna Barlovento, La Palma. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77892; 1 juv. Garafia, Franceses. La Palma 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77893; 1♂ sub., El Paso, Mendo, La Palma. 22-28th March 2017. Roca-Cusachs leg Deposited at CRBA under de code CRBA-77894; 1♂ sub., El Paso, Mendo, La Palma. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77895; 1 juv. El Paso, Mendo, La Palma. 22-28th March 2017. Roca-Cusachs leg. Deposited at CRBA under de code CRBA-77896.

DIAGNOSIS: *O. kraepelinorum* has some resemblance with the male palp (Fig. 4A) of two Mediterranean representatives, *O. lineatus* and *O. nigripalpis*. With the first one, *O. kraepelinorum* can be easily distinguished by the smaller tibial apophysis and shorter and slim retinaculum. With *O. nigripalpis*, beside the same differences in the retinaculum, the Mediterranean species has a darker coloration (Weiss, 1989). The epyginum (Fig. 4B) has no resemblance with these two species as *O. lineatus* has a more complex structure while in *O. kraepelinorum* can only be seen the two spermathecas, and with the difference between *O. nigripalpis*, these spermathecas are more smooth and rounded.

DESCRIPTION: Male. Total length 4 mm. Prosoma length 1.7 mm, width1.3mm. Carapace yellowish with three dark longitudinal stripes across the prosoma, the lateral stripes black, the central stripe pale brown. The eyes are surrounded by a dark brown area. The chelicerae are almost white with a central black stripe. The opisthosoma is mostly black with a central white stripe with small pinkish coloration, medially with a pale brown mark with a dark contour. The flanks of the opisthosoma are black with scattered whitish patches. The ventral opisthosoma is mostly lightly coloured with a central longitudinal dark stripe. The male palp has a small and stout tibial apophysis. The retinaculum is small and slim. In a ventral view, the embolous starts in a mesal position with a basal direction and then bends making a round to the entire bulb reaching then the retinaculum. Cymbium tip projected.
Female. Total length 5.5 mm. Prosoma length1.9 mm, width 1.4 mm. The pattern of the prosoma is similar than the male, though darker. The coloration pattern of the opisthosoma as in the male but with white stripes in the dark areas. Flanks and ventral opisthosoma as in the male. The epigyne has a few sclerotization and the spermathecas are small and rounded.

DISTRIBUTION: This species can be found in all the Canary Islands except Lanzarote (Oromí *et al.,* 2004).

Discussion

Most of the species hereby cited were already known from the Canary Islands, which renders these new records in La Palma not surprising. Some of these, such as *Hypsosinga albovittata, Pelecopsis inedita* or *Styloctetor romanus*, due to their unequivocal ability to disperse through ballooning, are examples of widespread species that have successfully colonized the islands. However, the species *Haplodrassus dalmatensis* now presents an odd disjunct distribution in the archipelago, since its only previous record is Fuerteventura (in the eastern group of islands), if it is a case of a real disjunct distribution or an undersampling contingency remains unknown.

With this work, seven new records for La Palma are reported. Two are endemic from the Canary Islands and one was never reported in the Macaronesia before. These results show that more work has to be done to reach an optimal knowledge of the spider diversity in this archipelago.

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