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Belonochilus numenius, the sycamore seed bug, new record for the Iberian fauna

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Abstract

Belonochilus numenius (Say) (Heteroptera Lygaeidae) is reported for the first time in the Iberian Peninsula, from two specimens, one at each of two urban areas in Catalonia (Spain). The suspected host plant, *Platanus* sp., is very common as an ornamental at the collecting sites. This is the second report for the Palaearctic Region, after collections in France (Matocq, 2008).

Key words: faunistics, new record, Iberian Heteroptera, true bugs, allochthonous species, *Platanus*, plane tree.

Introduction

The worldwide exchange of goods and tourists facilitates the movement of allochthonous species, often referred to as "aliens". Italy seems to be the most common door of entrance to Europe, due to its location in the middle of the Mediterranean Basin (Jucker *et al*., 2008). About 50% of imported species belong to the Hemiptera, and are scale-insects or aphids. Among true bugs, recent examples of imported species are the sycamore lace bug *Corythuca ciliata* (Say) (Tingidae) and western conifer seed bug *Leptoglossus occidentalis* Heidemann (Coreidae). Also the American oak lace bug *Corythuca arcuata* (Say), andromeda lace bug *Stephanitis takeyai* Drake et Maa and azalea lace bug *Stephanitis pyrioides* (Scott) have been reported (Jucker *et al*., 2008), although they seem to be less widespread.

In Catalonia, the most recent reports of allochthonous species concern *L. occidentalis* (Ribes *et al.*, 2008), and *Arocatus longiceps* Stål (Ribes and Pagola-Carte, 2008), a pontomediterranean lygaeid which is expanding its range.

Identification of *Belonochilus numenius*

Belonochilus numenius (Say 1832) (Heteroptera Lygaeidae) the sycamore seed bug (common name suggested by Sweet, 2000), belongs to a group species of family Orsillinae, tribe Orsillini with spiny fore femora, in which European, African and American species may be found (Péricart, 2001). In Ashlock's (1967) key to world genera of the tribe Orsillini, *Belonochilus* is reached through the following characters: mesopleuron appearing to overlap propleuron, antenniferous tubercle not produced beyond point of attachment of antenna, profemora armed with a single spine ventrally, vertex without carinae, head long, and anteocular length more than twice length of eye. The genus is monotypic. The few other species described in, or at one time placed in, *Belonochilus* have been synonymized with *numenius* or transferred to other genera (Slater, 1964).

In the context of the Palaearctic fauna, *B. numenius* can be easily identified. The only other orsilline genus that has armed profemora is *Orsillus*. Using Péricart's key on euromediterranean Lygaeidae (Péricart, 1998), *B. numenius* is easily attributed to subfamily Orsillinae. In Péricart's opinion, tribes within the subfamily Orsillinae have not yet been resolved; thus he does not include a key to tribes. To include *Belonochilus*, we propose a slight amendment in the first step of his generic key:

1 (2) Profemora spiny. Rostrum reaching at least the middle of the abdomen.
1a (1b) Profemora with 1 spine. Body elongate, not depressed. Anteocular length more than three times length of eye .....*Belonochilus*
1b (1a) Profemora with 3 spines. Body oval-elongate, depressed. Anteocular length about twice length of eye .....*Orsillus*
2 (1) Profemora not spiny. Rostrum at most slightly surpassing the metacoxae.

For remaining couplets, refer to Péricart's key.

Figures 1, 2 and 3 allow ready identification of *B. numenius*.

Figure 1. Dorsal view of *B. numenius*. Photo: Albert Masó.
(In colour at www.bulletinofinsectology.org)

Biology

B. numenius may complete its biological cycle upon the seed balls of the sycamore tree *Platanus occidentalis* L. (Heidemann, 1902; Wheeler, 1984), which it pierces

Figure 2. Lateral view of a female *B. numenius*. Photo: Marta Goula.
(In colour at www.bulletinofinsectology.org)

Figure 3. Lateral view of a male *B. numenius*. Photo: Marta Goula.
(In colour at www.bulletinofinsectology.org)

with its very long rostrum. It is considered a specialist on sycamores (plane in Europe) (Schuh and Slater, 1995). *Platanus racemosa* Nutt., *Platanus wrightii* S. Wats. and *Platanus mexicana* Moric. have been reported as host trees of *B. numenius* (Sweet, 2000). This arboreal niche is considered to be unusual for North American Orsillinae (Sweet, 2000). In some cases, the species may become a pest on ornamental planes, as for example the London plane (*Platanus* x *acerifolia*). Other occasional host plants are goldenrod (*Solidago* sp.), giant ragweed (*Ambrosia trifida* L.), hackberry (*Celtis occidentalis* L.) and willow (*Salix* sp.) (Wheeler, 1984).

Detailed studies from field samples in Pennsylvania, and from rearing in laboratory conditions, permitted the description of life cycle, of egg and fifth instar, as well as diagnoses for the second to fourth instars (Wheeler, 1984). Overwintering occurs as eggs in the plane tree seed balls, mainly those fallen on the floor. Only a few proportion of the first generation population develops in the fruit heads remaining attached to the tree. Number of individuals per fruit, either adults or nymphs, ranged from 0 to more than 50 (average 15/fruit). Hatching begins in the first half of April, until early May. Early instars keep protected inside the fruiting heads. First adults are found in May 20, and oviposition occurs in the current-season fruits, more rarely in old fruits remaining on the tree, and never in the old fallen fruit heads. Mating and oviposition of the first generation lasts until June 10, overlapping with all nymphal stages of the second generation. At 20 ºC under natural photoperiod, the nymphal period requires an average of 28.8 days. By early October, the species has developed four generations. Eggs deposited by third and fourth generation females represent the overwintering stage. Adults may be found under bark either in autumn or in early spring, which suggests that overwintering adults may be found in more southern (warm) localities (Wheeler, 1984).

Distribution

The native area of *B. numenius* is the Nearctic Region. Ashlock (1967) summarizes the distribution of *B. numenius* as restricted to southern Canada, United States and most of Mexico, between latitudes 15º-45ºN. Slater (1964) and Ashlock and Slater (1988) give a detailed list of USA states and Canadian provinces where the species is known.

B. numenius has been reported for the first time in the Palaearctic by Matocq (2008), through specimens found in Corsica and Languedoc. The present work includes the first records for the Iberian Peninsula (figure 4). The localities of samples from Catalonia are (UTM projection is based in the datum Europe 1950, Spain and Portugal):

1) Castelldefels, UTM 31TDF17, Barcelona province, Catalonia, Spain, 11 VIII 2008, 1 male. On a wall, near a row of ornamental *Platanus* x *hybrida*. F. Gessé *leg*.
2) Barcelona city, Barceloneta area, UTM 31TDF38, Barcelona province, Catalonia, Spain, 2 IX 2008, 1 female. On the door of a drugstore. J. J. Pérez De Gregorio *leg*., J. Ribes *det*. et *coll*.

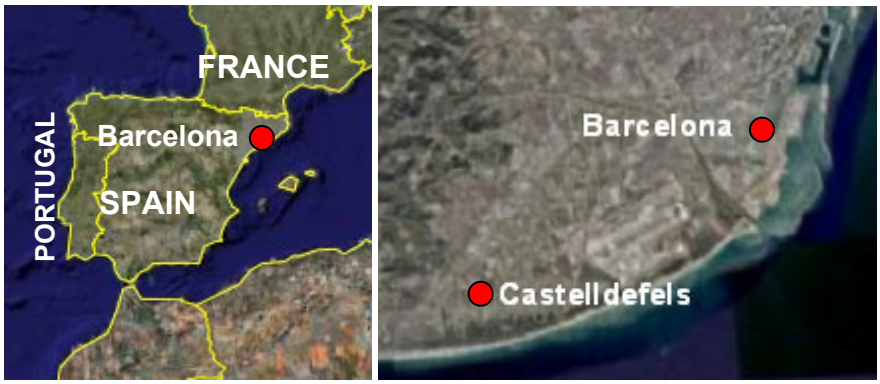

Figure 4. Localities where *B. numenius* was collected in Catalonia.

North American specimens, lent by the American Museum of Natural History of New York, were also studied:

1) Black Mountains, VI. 17, N.C., *det*. unknown. 1 female, 1 male.
2) USA, New York, Columbia Co., Stockport Marsh, July 1981. R. Schmidt., ex: fruits of *Populus deltoides*. R. Schmidt *det*. 1 female, 2 males.

Concluding remarks

B. numenius has been collected in South France, Corsica and Spain in a very short lapse of time (from August to October 2008). The origin of the importation has not been elucidated in any of both reports. As plane trees are very common as ornamentals, high attention must be payed to possible new records of the sycamore seed bug, which may become a pest in parks and urban areas, although it doesn't in natural plane tree habitats (Sweet, 2000).

As it happened in the past with *L. occidentalis* and *C. ciliata*, more records are needed to confirm or not the establishment of *B. numenius* in Europe, and eventually its noxious effects.

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