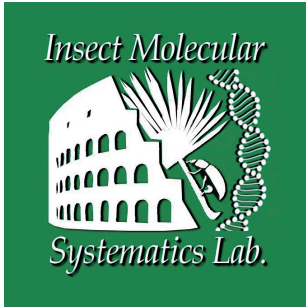




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First records of *Lethocerus* cfr. *patruelis* (Stål, 1854) from Calabria (southern Italy) (Hemiptera: Heteroptera, Belostomatidae)Elvira CASTIGLIONE ¹, Elia LO PARRINO ^{2,*}, Francesco MANTI ³, Filippo TOMASI ⁴¹ Via Reggio Campi attravers. Terreti 3, 89126 Reggio Calabria, Italy - elvira.castiglione@hotmail.it² Department of Environmental Science and Policy, University of Milan, Via Celoria 26, 20133 Milan, Italy - loparrino.elia@yahoo.it³ Via P. Andiloro 291, 89128 Reggio Calabria, Italy - framanti@libero.it⁴ Museo di Storia Naturale del Salento, SP Calimera-Borgagne km 1, 73021 Calimera (Lecce), Italy - filippotomasi3@gmail.com

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Abstract

Lethocerus patruelis (Stål, 1854) is the only European member of the Belostomatidae family. During the last decades *Lethocerus patruelis* records have become frequent in south-eastern Italy, probably due to multiple accidental introductions or a natural westward spread of its range. The first records of *Lethocerus* cfr. *patruelis* for the Calabria region are here reported. The first individual was observed alive and photographed in Villapiana (Cosenza province), while the second one was found and collected in Prunella (Melito di Porto Salvo municipality, Reggio Calabria province). The status of *Lethocerus patruelis* in this region and in Italy as introduced or naturally spreading species is yet to be assessed.

Key words: Heteroptera, *Lethocerus*, Italy, Calabria, first records.

The family Belostomatidae (Hemiptera: Heteroptera: Nepomorpha), includes ca. 150 predator species, commonly called “giant water bugs”, living in freshwater habitats of world’s subtropical and tropical areas and divided into two subfamilies: Lethocerinae (three genera) and Belostomatinae (eight genera) (Ohba 2019).

Within the subfamily Lethocerinae, the genus *Lethocerus* Mayr, 1853 has a distribution including Americas, Europe, Africa, and Asia (Perez Goodwyn 2006; Sareein et al. 2019).

Two *Lethocerus* species are present in the Western Palearctic region: *L. cordofanus* Mayr, 1853, distributed in central tropical Africa (south of the Sahara desert from the Gulf of Guinea to Somalia, with southernmost record in South Africa) and Middle-East, reaching the Mediterranean through the Nile River basin (Novoselsky et al. 2018; Perez Goodwyn 2006), and *L. patruelis* (Stål 1854), distributed in Asia and Europe, with European records from Albania, Bosnia, Bulgaria, Croatia, Greece (including Crete and Rhodes), Hungary (possible), Italy, Macedonia, Montenegro, Romania, Serbia and Turkey (Aukema & Rieger 1995; Perez Goodwyn 2006; Bacchi & Rizzotti Vlach 2007; Cianferoni & Nardi 2013; Grozeva et al. 2013; Dulčić et al. 2015; Stoianova & Simov 2016; Esposito et al. 2017; Novoselsky et al. 2018; Corsini-Foka et al. 2019; Sareein et al. 2019). The oldest known record of *Lethocerus patruelis* from

Italy, dated 1997 with some doubts, is from the Apulia region in southern Italy (Cianferoni & Nardi 2013), while the first published record, dated 2000, is from the Abruzzo region in central Italy (Bacchi & Rizzotti Vlach 2007). In the last decades there have been many records of this species coming from the Apulia region (Cianferoni & Nardi 2013; Esposito et al. 2017).

In 2015 a specimen was collected in the Basilicata region (southern Italy), making it the third Italian region where this species has been found (Lo Parrino 2019).

The reason of the presence in Italy of *Lethocerus patruelis*, whether by introduction or by natural westward expanding of its range, it is still an open question (Cianferoni & Nardi 2013). Here the first records of *Lethocerus* cfr. *patruelis* from Calabria region are reported, based on a photographed and not collected specimen, whose sex is not determinable, and on a collected female (Fig. 1).

The first specimen, alive on the ground, was photographed by Mr. D. Nicoletti in Villapiana (Cosenza province), on 11 Nov 2018 (Fig. 2); the author of the photos posted two pictures of the individual on an entomology-dedicated Italian Facebook group (‘Riconoscimento Insetti’).

The closest published record of *Lethocerus patruelis* is the one from Calciano (Basilicata region), approximately 90 km away. Although it was not possible to identify the species from the pictures, its proximity to a confirmed

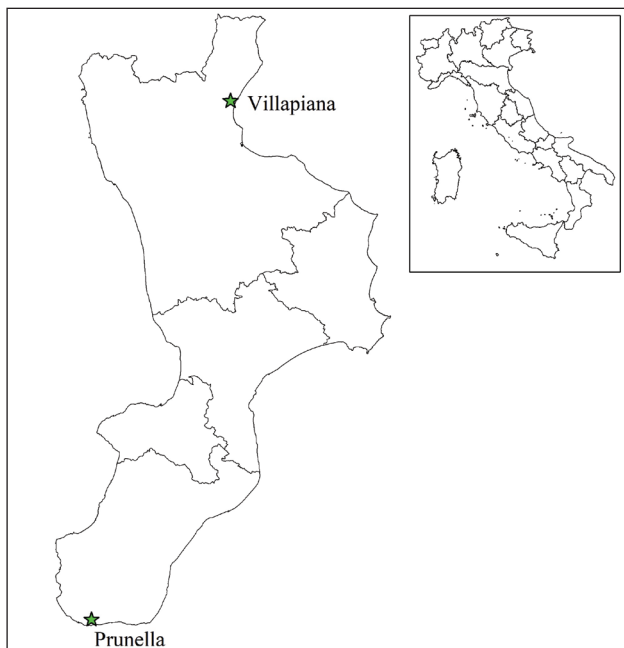


Fig. 2 – *Lethocerus* cf. *patruelis* specimen (alive on the ground) photographed by Mr. D. Nicoletti in Villapiana (Cosenza province), on 11 Nov 2018.

Lethocerus patruelis record could suggest the same specific identity. Since there is no ventral picture of the specimen, it was not possible to determine its sex.

The second specimen, a female, dead and damaged, was collected by Mr. F. Barilla in Prunella (Melito Porto Salvo municipality), Reggio Calabria province, 37° .56'N, 15° .47'E, on 28 Aug 2019 (Fig. 3) and then delivered to two of us (E. Castiglione and F. Manti), who later made an inspection in the location of the finding, in order to collect further information.

The individual was seen flying around a lamp by night and later killed by the locals. It is known that all Belostomatidae show a high positive phototropism, a behaviour already observed in *Lethocerus* sp. individuals (Cianferoni & Nardi 2013; Dulčić et al. 2015; Corsini-Foka et al. 2019). During the inspection, a check was carried out on the surrounding freshwater habitats, but no other specimen was found.

It should be noted that this specimen exhibits a morphological character which, according to the key proposed by Novoselsky et al. (2018), is more compatible with *L. cordofanus* than with *L. patruelis*: its prosternum shows a bearing-shaped keel as in *L. cordofanus* (evident even



Fig. 3 – *Lethocerus* cf. *patruelis*, ♀ individual from Prunella (Melito Porto Salvo municipality), dorsal view.



Fig. 4 – Prosternal bearing-shaped keel of the *Lethocerus* cf. *patruelis* individual from Prunella. The apex is missing due to damage to the specimen.

if its apical “beak” is lost, probably due to the crushing of the specimen), instead of an “ulu-shaped” keel, as in *L. patruelis* (Fig. 4).

Lethocerus patruelis can be separated with certainty from the close taxon *L. cordofanus* only by the shape of the aedeagus, because other morphological external characters used in some published keys, included the shape of

the apical “beak”, are quite variable within the two species (Cianferoni, personal communication). All Italian specimens collected so far have been female individuals, except for one male individual found in the Basilicata region, thus they have been ascribed to *Lethocerus patruelis* on the basis of their habitus (Cianferoni & Nardi 2013; Esposito et al. 2017; Lo Parrino, 2019). The proximity of most Italian observations to the Balkan peninsula, that represents the western border of *Lethocerus patruelis* range, strongly supports this identification.

For these reasons we prefer to treat the records here reported as *Lethocerus* cfr. *patruelis*, although, despite being an unlikely event, it is not possible to exclude a priori an accidental introduction of *L. cordofanus*.

The collected specimen is deposited in the private collection of E. Castiglione (Reggio Calabria). As previously stated, *Lethocerus patruelis* presence in Italy might be the result of a natural westward spread from the Balkans or accidental introduction events (Cianferoni & Nardi 2013). Due to their distance from the Adriatic Sea, the findings here reported may indicate a spread of *Lethocerus patruelis* in Italy, although an independent introduction in the Calabria region cannot be excluded. Nonetheless, the Prunella record possibly represents the westernmost known record of *Lethocerus patruelis*.

Further searches are needed to prove the presence of viable populations of *Lethocerus patruelis* in Calabria and in Italy in general.

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