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Silpha tyrolensis Laicharting, 1781 (Coleoptera: Silphidae), an unexpected addition to the Belgian fauna

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Abstract

In the course of the Belgian Silphidae Project, four specimens of *Silpha tyrolensis* Laicharting, 1781 were encountered when studying the unidentified Silphidae in the entomological collection of the Haute École Provinciale de Hainaut-Condorcet in Ath. These are the first records of this species for Belgium and are from the period 1990–2010. Subsequent recent trapping in the region where the specimens were found revealed no additional specimens. In this paper the records are presented and the distribution of the species in Belgium and Europe is mapped and discussed.

Keywords: Carrion beetles, distribution, Silphinae

Samenvatting

Tijdens de determinatie van ongedetermineerde Silphidae in de entomologische collectie van de Haute École Provinciale de Hainaut-Condorcet te Ath in het kader van het Belgian Silphidae Project, werden vier exemplaren van *Silpha tyrolensis* Laicharting, 1781 aangetroffen. Dit zijn de eerste vondsten voor deze soort in België en dateren van de periode 1990–2010. Een gericht recent onderzoek met aasvallen in de regio leverde geen extra vondsten op. In dit artikel presenteren we de vondsten van deze soort en wordt de verspreiding in België en Europa in kaart gebracht en besproken.

Résumé

Dans le cadre du Belgian Silphidae Project, quatre spécimens de *Silpha tyrolensis* Laicharting, 1781 ont été rencontrés en examinant les Silphidae non identifiés de la collection entomologique de la Haute École Provinciale de Hainaut-Condorcet. Ces signalements sont les premiers pour cette espèce en Belgique et remontent à la période 1990–2010. Un piégeage ultérieur récent dans la région où les spécimens ont été récoltés n'a révélé aucun spécimen supplémentaire. Dans cet article, les données de cette espèce sont présentées, sa distribution en Belgique et en Europe cartographiée puis discutée.

Introduction

Silphidae are a rather species-poor beetle family with only 291 species in the Palearctic region of which 44 species occur on the European mainland (RŮŽIČKA & SCHNEIDER, 2004). The taxonomic composition and general distribution of the species in central and western Europe is well known and, with the exception of some temporal changes within the distribution, largely unchanged in the last 200 years. No new species of Silphidae have been recorded in Belgium

since the end of the 19th century. When identifying Silphidae in a private collection in the course of the Belgian Silphidae Project (http://www.srbe-kbve.be/cm/belgian-silphidae-project), surprisingly, four specimens of *Silpha tyrolensis* Laicharting, 1781 (Fig. 1) were encountered among the material. These are the first confirmed records of this species in Belgium. The only mention of this species in Belgium is an old literature record (under the synonym *Silpha nigrita* Creutzer, 1799) near Etterbeek (Brussels) in 1880 by PREUDHOMME DE BORRE (1890). This record is based on a misidentification of *Silpha obscura obscura* Linnaeus, 1758 (HOLDHAUS & LINDROTH, 1939) and Belgium is not included in the distribution of this species in the Palearctic catalogue (RŮŽIČKA & SCHNEIDER, 2004).

Fig. 1. Specimen of *Silpha tyrolensis* forma *nigrita* Laicharting, 1781 collected near Hautrage, Hainaut; (scale bar = 5 mm). © RBINS.

Silpha tyrolensis is a West- and Central-European species with a distribution ranging from Ireland, Great Britain and the Iberian Peninsula in the west to the northeast of the Czech Republic (Fig. 2). According to RŮŽIČKA & SCHNEIDER (2004), the species is recorded from Andorra, Austria, Czech Republic, France, Great Britain, Germany, Ireland, Italy, Liechtenstein, Portugal, Romania, Spain and Switzerland. *S. tyrolensis* has its main distribution in southwest Europe and is not uncommon in the Pyrenees, the Alps and other mountainous areas in southern France and the Iberian Peninsula (Fig. 2). The occurrence of disjunct

populations in Great Britain and the Czech Republic is rather striking and could be the result of isolation during the last ice age.

Silpha tyrolensis is a submontane to alpine species (PORTEVIN, 1926; HEYMONS & LENGERKEN, 1929; HOLDHAUS & LINDROTH, 1939). According to LETZNER (1887) the species occurs from 600 m to 1400 m a.s.l. and KOČÁREK (1996) found the species between 800 m and 1400m a.s.l. in the Czech Republic. The habitat of this species are meadows and pastures in mountainous areas, typically near and above the tree line (HEYMONS & LENGERKEN, 1929). Like most species of the genus *Silpha* Linnaeus, 1758 *S. tyrolensis* is omnivore, both as larvae and adult (HEYMONS & LENGERKEN, 1929). HEYMONS & LENGERKEN (1929) give a detailed account of the biology of this species. They mention that in captivity the species accepts pieces of meat, fruit, plant leafs and mushrooms. In the wild the species is commonly found feeding on dead insects, worms and snails, but also on grasses and leaves of different plant species. Adults are found from April till October and are mainly diurnal.

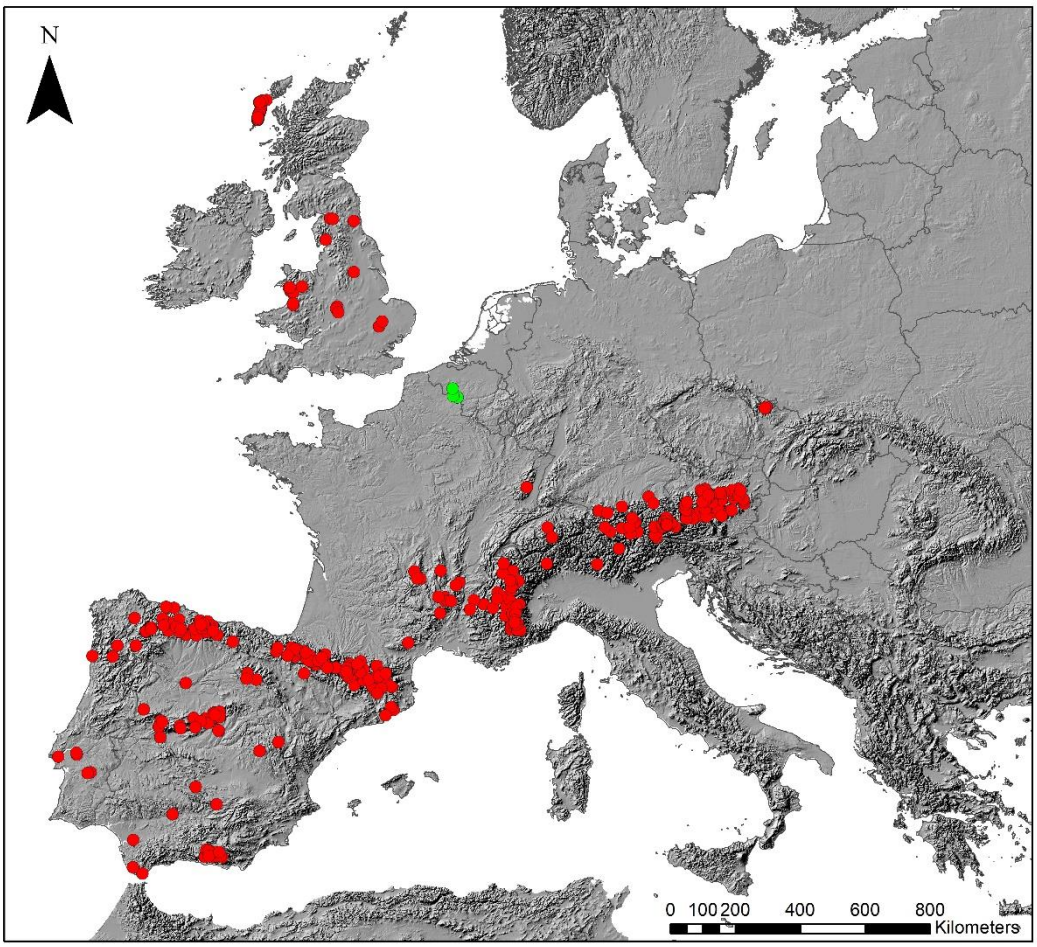

Fig. 2. Distribution of *Silpha tyrolensis* Laicharting, 1781 in Europe.
Red dots indicate published records and green dots represent the new records in Belgium.

Material and methods

During the course of the Belgian Silphidae Project, all available public collections, most of the private collections and all records with photographic evidence on the citizen sciences data platforms www.waarnemingen.be, www.observations.be and www.inaturalist.org were revised. Distribution maps were made with ArcGIS 10.4.1. In addition to the Belgian records, the European distribution data of *S. tyrolensis* were compiled from the datasets included in

GBIF (GBIF, 2019) and the following literature (KOČÁREK, 1996; PRIETO *et al*., 2002). The distribution map in Fig. 2. is only indicative and the records on the map are not exhaustive, there will be additional records present in literature and collections.

Results

MATERIAL EXAMINED: 1♀ (forma *nigrita*): [label illegible]/ VII.1990; 1♀ (forma *nigrita*): Hautrage/ 10.VII.1990/ leg. Declercq A.; 1♂ (forma typica): Œudeghien/ 19.VII.2010/ leg. Nachtergaele, Cochon mort [dead pig]/ Capture à main [captured by hand]; 1♀ (forma *nigrita*) Mons/1/V.1991.

A total of three Belgian specimens was encountered in the collection of Haute Ecole Provinciale de Hainaut Condorcet. The handwritten location of a fourth specimen was, however, illegible and could not be located. The other three specimens were from three different localities, all located in the north of the province Hainaut (Fig. 3). A subsequent survey in the area with baited (prawns) pitfall traps in both forest and open habitats was carried out from the 14th to 21st of July 2019. Although these traps yielded several hundred specimens of ten different species of Silphidae, they failed to trap any additional specimens of the target species. The overall distribution of *S. tyrolensis* is given in Fig. 2. Although this species is mentioned to occur in Romania (RŮŽIČKA & SCHNEIDER, 2004) we could not find any confirmed records of this species from this country.

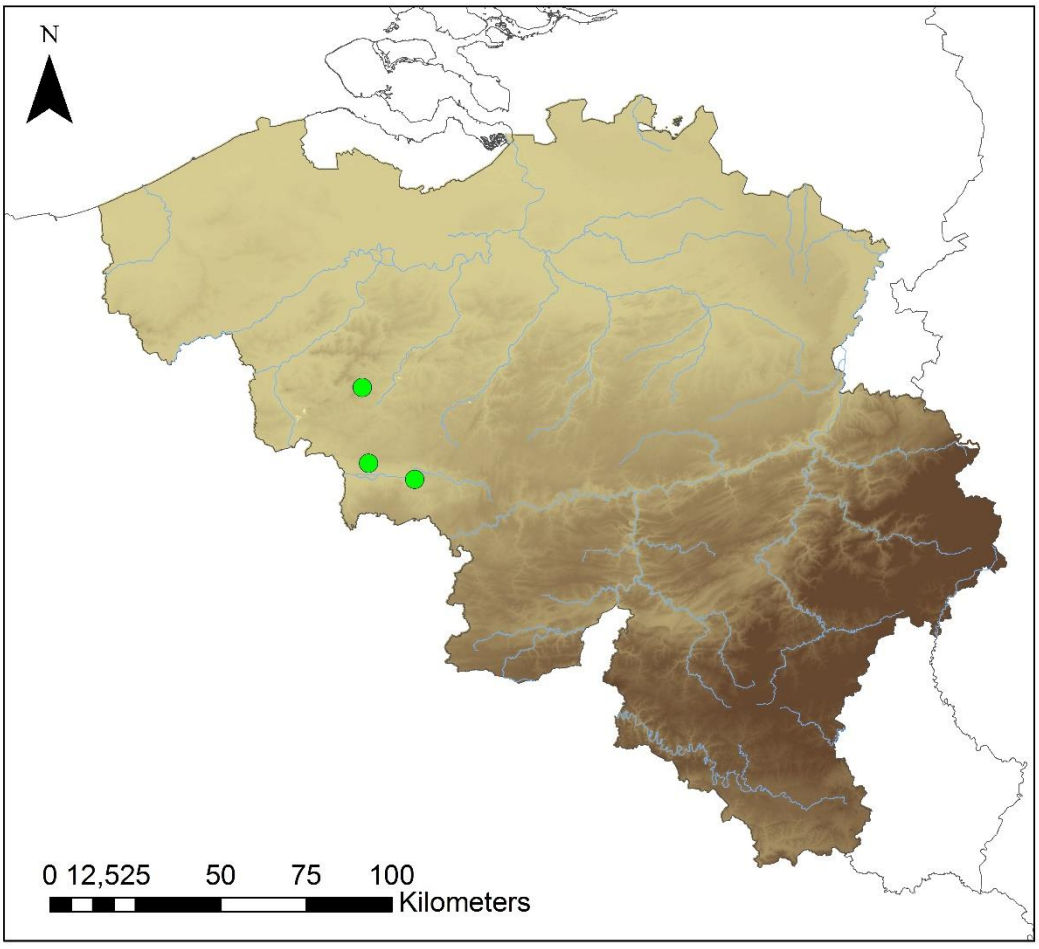

Fig. 3. Distribution of *Silpha tyrolensis* Laicharting, 1781 in Belgium.

Discussion and conclusion

The discovery of this strictly montane species in Belgium is quite unexpected. The region in which the species is recorded is below 200 m a.s.l. and far from mountainous. The records are all located in an intensive agricultural landscape with isolated fragments of broadleaf forest on a loamy soil. It is very difficult to ascertain if this species was overlooked in the past or if this is the result of a recent range expansion or accidental introduction. In the Netherlands this species has been intercepted only once in Leiden, and it is thought to have been imported with plant material or compost of the Hortus Botanicus (COLIJN & HEIJERMAN, 2020). All records are from the province of Hainaut, which is one of the entomologically less collected areas in the past. On the other hand, *S. tyrolensis* is a fairly big and rather easily recognizable beetle and it is hard to believe it was overlooked all this time. The population in Belgium is located in the middle of the gap in the distribution of this species between Great Britain and the closest population on the mainland in the Vosges in France (Fig. 2, resp. 300 and 350 km) (cf. DEBREUIL, 2004). The habitat of this species in Belgium is unknown and a specific survey with baited traps (12 traps at 6 sites) for Silphidae in the area in 2019 didn't result in any additional specimens. Presumably this species occurs in open vegetation of meadows and roadsides which best resembles the habitat occupied in southern Europe. Additional records in the future will hopefully result in a better view on the distribution of this species and its habitat in Belgium. Although RŮŽIČKA & SCHNEIDER (2004) include Romania in the distribution of *S. tyrolensis*, we could not find any confirmation of its presence in that country and based on the overall distribution of this species we consider the presence in Romania as doubtful and in need of confirmation.

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