



Confirmation of *Nicrophorus sepultor* Charpentier, 1825 as a Belgian species (Coleoptera: Staphylinidae: Silphinae)

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Abstract

In this note the status of the burying beetle *Nicrophorus sepultor* Charpentier, 1825 as a Belgian species is confirmed based on eight specimens found in the collections of the Royal Belgian Institute of Natural Sciences (RBINS). The records are presented, mapped and the diagnostic features of this species are given.

Keywords: Carrion beetles, Silphidae, burying beetles, sexton beetles, Belgium

Samenvatting

In dit artikel wordt het voorkomen van de doodgraver *Nicrophorus sepultor* Charpentier, 1825 in België bevestigd op basis van acht exemplaren in de collectie van het Koninklijk Belgisch Instituut voor Natuurwetenschappen (KBIN). De records worden kort besproken, in kaart gebracht en de diagnostische kenmerken van deze soort worden opgelijst.

Résumé

Dans cette note, le statut de *Nicrophorus sepultor* Charpentier, 1825 en tant qu'espèce belge est confirmé sur la base de huit spécimens trouvés dans les collections de l'Institut royal des Sciences naturelles de Belgique (IRSNB). Les données sont présentées, cartographiées et les caractéristiques diagnostiques de cette espèce sont illustrées.

Introduction

Nicrophorus sepultor Charpentier, 1825 is one of the rarest species of Silphinae (until recently regarded as subfamily Silphidae c.f. CAI *et al.* (2022)) in Western Europe. It is a Palearctic species with a wide distribution ranging from Western Europe to Eastern Siberia and the west of China (RŮŽIČKA, 2015). Like most species in the genus, *N. sepultor* has a relatively large distribution range but unlike most species the records are scattered, and the species is nowhere common. This species was mentioned from Belgium by MATHIEU (1859) and KERREMANS (1880), both without locality, and by PREUDHOMME DE BORRE (1890) as occurring in or near Brussels, with the mention 'Rare' and the collector (Mertens). These historic works, however, include many errors and the records should be used with some caution. *N. sepultor* is not included as Belgian in the Palearctic catalogue (RŮŽIČKA & SCHNEIDER, 2004; RŮŽIČKA, 2015) and neither DEKEIRSSCHIETER *et al.* (2011, 2012) or COLIJN & HEIJERMAN (2020) include Belgium in the distribution of this species. The presence of this species in neighboring countries has been documented for over a century and the presence in Belgium seems therefore obvious.

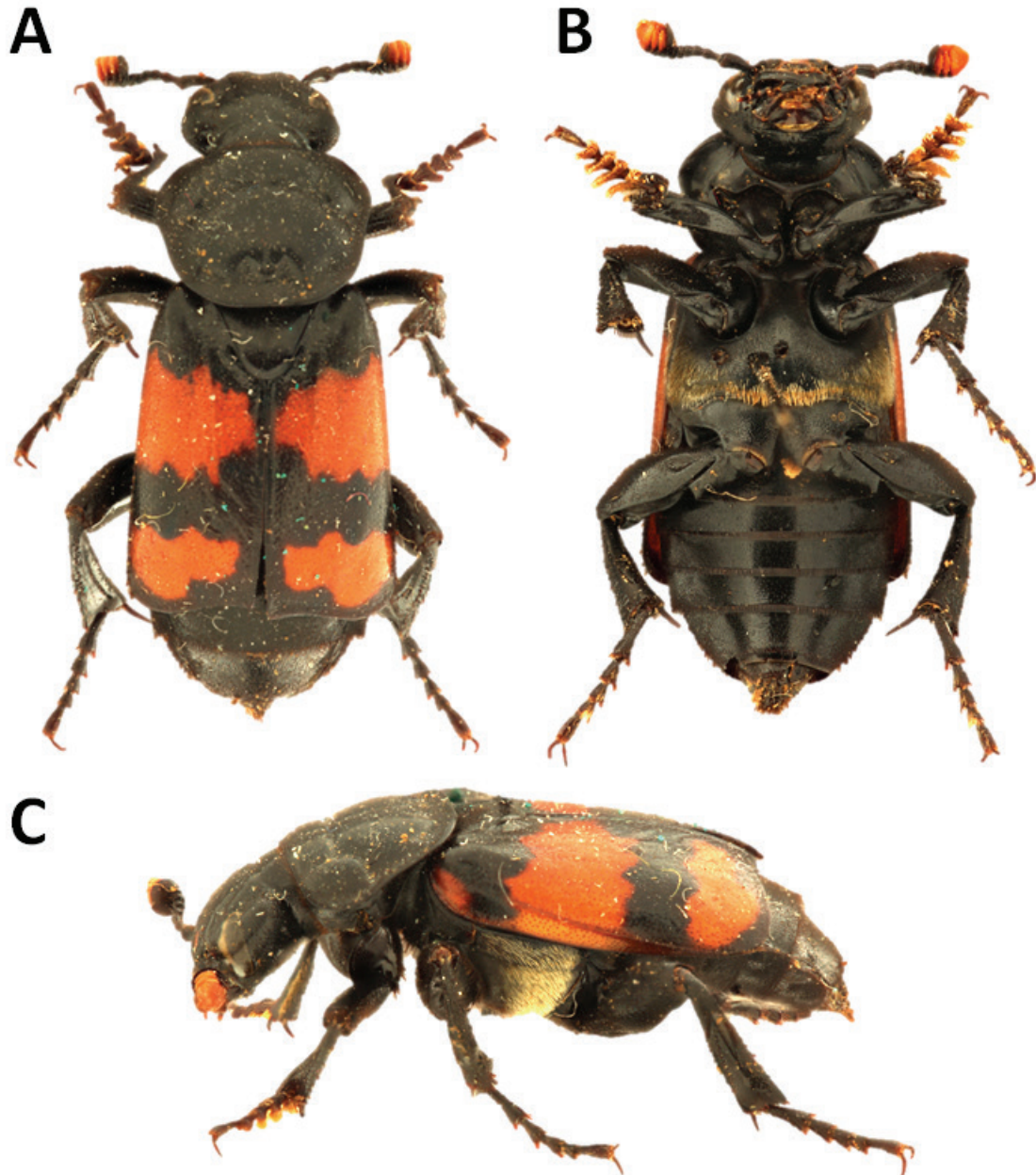


Fig. 1. *Nicrophorus sepultor* Charpentier, 1825 (Tervuren [Brussels], 7.VII.1975, coll. L. Frennet, RBINS), habitus. A, dorsal view. B, ventral view. C, left lateral view. © Julien Lalanne.

During a recent revision of the Silphinae in the Belgian collections eight specimens of this rare species were encountered. These specimens confirm *N. sepultor* was present in Belgium from the second half of the 19th century until fairly recently (1981), and this species can be added to the Belgian species list.

Results

MATERIAL EXAMINED: ● ‘Forêt de Soignes’ [Brussels], 11.V.1899, coll. Jacobs, 2 ex., RBINS; ● Saint-Gilles [Brussels], 1901, 1 ex., RBINS; ● Louvain [Leuven, Vlaams-Brabant], VI.1906, coll. Vandenplas, 1 ex., RBINS; ● Richelle [Liège], 23.IX.1932, coll. J. Muller, 1 ex., RBINS; ● Tervuren [Brussels], 7.VII.1975, coll. L. Frennet, 1 ex., RBINS; ● Bruxelles [Brussels], 19.V.1981, coll. Mertens, 1 ex., RBINS; ● Bruxelles [Brussels], [SD], 1 ex., RBINS.

Nicrophorus sepultor can be distinguished by the following characters: antennal clubs orange (Fig. 1 A-C); hind tibiae straight (Fig. 1 A-C); each elytron black with two orange fasciae of which the posterior orange fascia on the elytra is well separated from the posterior margin of the elytra (Fig. 1A); the anterior black fascia on the elytra continues on the otherwise completely orange epipleura more or less reaching the lateral margin (Fig. 1 C); abdominal segments, including pygidium, with dark, short setae (Fig. 1 A-C); the metepimeron with very few setae (Fig. 1B) and metasternum with golden pubescence in posterior and lateral margins, and with dark, short setae in the central portions (Fig. 1 B).

In Europe, this species is most easily confused with *Nicrophorus interruptus* Stephens, 1830 and especially with *Nicrophorus investigator* Zetterstedt, 1824. *N. interruptus* has the abdominal segments completely covered with golden pubescence and *N. investigator* has the abdominal segments with dark setae except the pygidium, which bears yellow-golden setae. Moreover, the latter species has the epipleuron unicolorous orange, at most with some infuscation where the basal dark fascia meets the epipleuron.

Nicrophorus sepultor is known from only seven records in Belgium, all but one from the centre of the country (Fig. 2).

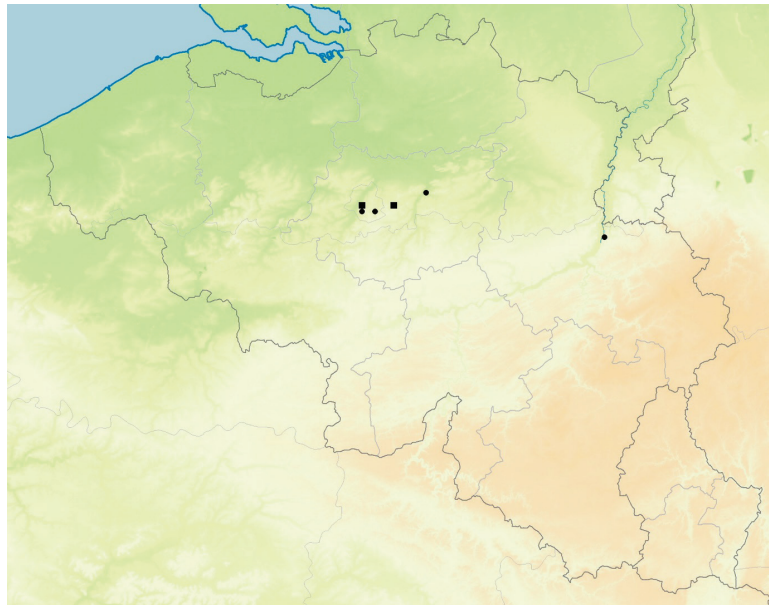


Fig. 2. Distribution of *Nicrophorus sepultor* Charpentier, 1825 in Belgium on UTM 2,5 x 2,5 km grid. Records represented with '●' indicate records prior to 1950 and '■' indicate records from 1950 onwards.

Discussion and conclusion

The records presented in this paper confirm the status of *Nicrophorus sepultor* as a Belgian species. All Belgian records are from the Loam region, which is characterised by its loamy soil and slightly hilly relief. In Central Europe, it is reported as an inhabitant of open habitats like fields and grasslands (ALEKSANDROWICZ & KOMOSINSKI, 2005), with a preference for chernozem over fluvisol soils (JAKUBEC & RŮŽIČKA, 2012, 2015). In southern Russia, it is reported from steppe biomes (PUSHKIN, 2015). In Turkey, it was collected in steppe and meadow habitats (ÇİFTÇI *et al.*, 2018). Although the habitat in which the Belgian specimens were collected can no longer be traced, the Loam region is a good fit with the habitat of this species as described abroad. This is especially true for the past, when agriculture was not yet industrialised.

The most recent record of *Nicrophorus sepultor* in Belgium dates back to 1981. Considering the lack of recent records and the overall rarity of this species in Europe, *N. sepultor* should now probably be considered as extinct in Belgium. In the surrounding countries *N. sepultor* is also extremely rare. In the Netherlands, there are only five records including a single recent rediscovery at a site in the centre of the country (COLIJN & HEIJERMAN, 2020). In France, the species has always been rare with records scattered throughout the country (DEBREUIL, 2004).

In Germany, the species is also rare, but there are several recent records (BLEICH *et al.*, 2022). The recent observations of this species in all neighboring countries illustrate the possibility that this species may be rediscovered in Belgium in the future.

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References

- ALEKSANDROWICZ O.R. & KOMOSINSKI K., 2005. - On the fauna of carrion beetles (Coleoptera, Silphidae) of Mazurian Lakeland (north-eastern Poland). In: SKŁODOWSKI J., HURUK S., BARŠEVSKIS A., TARASIUK S. (eds). *Protection of Coleoptera in the Baltic Sea Region*, 147–153.
- BLEICH O., GÜRLICH S. & KÖHLER F., 2022. - *Verzeichnis und Verbreitungsatlas der Käfer Deutschlands*. – World Wide Web electronic publication www.coleokat.de [accessed on 02.IV.2022]
- CAI C., TIHELKA E., GIACOMELLI M., LAWRENCE J.F., ŚLIPIŃSKI A., KUNDRATA R., YAMAMOTO S., THAYER M.K., NEWTON A.F., LESCHEN R.A.B., GIMMEL M.L., LÜ L., ENGEL M.S., BOUCHARD P., HUANG D., PISANI D. & DONOGHUE P.C.J., 2022. - Integrated phylogenomics and fossil data illuminate the evolution of beetles. *Royal Society Open Science*, 9, 211771. <https://doi.org/10.1098/rsos.211771>
- ÇİFTÇİ D., RŮŽIČKA J., HASBENLI A., ŞAHİN Ü., 2018. - The large carrion beetles (Coleoptera: Silphidae) of Turkey: a review with a new species record. *Zootaxa*, 4441(3): 555-591. <https://doi.org/10.11646/zootaxa.4441.3.10>
- COLIJN E.O. & HEIJERMAN T., 2020. - *De Nederlandse aaskevers (Silphidae)*. *Entomologische Tabellen 12*. EIS Kenniscentrum Insecten, Leiden, 156 pp.
- DEBREUIL M., 2004. - Contribution à la connaissance de la famille des Silphidae Latreille, 1807 (Coleoptera Staphylinoidea) – 5^{ème} partie: addenda. *Rutilans*, 7(3): 73–78.
- DEKEIRSSCHIETER J., VERHEGGEN F., BONNET S. & HAUBRUGE E., 2012. - Recensement des Silphidae dans les collections entomologiques des étudiants de Gembloux Agro-Bio Tech sur la période 2001-2010. *Entomologie faunistique*, 64(1): 15-21.
- DEKEIRSSCHIETER J., VERHEGGEN F., LOGNAY G. & HAUBRUGE E., 2011. - Large carrion beetles (Coleoptera, Silphidae) in Western Europe: a review. *Biotechnologie, Agronomie, Société et Environnement*, 15(3): 435-447.
- JAKUBEC P. & RŮŽIČKA J., 2012. - Rozšíření mrchožroutovitých brouků (Coleoptera: Silphidae) otevřených krajiny ve vybraných nížinných oblastech České republiky. [Distribution of open landscape carrion beetles (Coleoptera: Silphidae) in selected lowlands of the Czech Republic]. *Klapalekiana*, 48: 169–189.
- JAKUBEC P. & RŮŽIČKA J., 2015. - Is the type of soil an important factor determining the local abundance of carrion beetles (Coleoptera: Silphidae)? *European Journal of Entomology*, 112: 747–754. <https://doi.org/10.14411/eje.2015.071>
- KERREMANS Ch., 1880. - *Catalogue des Coléoptères de Belgique et des régions voisines*. Office de Publicité, A.-N. Lebègue et Cie, Bruxelles, 67 pp.
- MATHIEU C., 1859. - Faune entomologique Belge - Coléoptères. *Annales de la Société Entomologique Belge*, 3: 1-92.
- PREUDHOMME DE BORRE A., 1890. - *Matériaux pour la Faune Entomologique de la province de Brabant: Coléoptères (cinquième centurie)*. Brussels, 34 pp.
- PUSHKIN S.V., 2015. - *Zhuki-mertvoedy (Coleoptera, Silphidae) Rosii: atlas-opredelitel*. [Carrion beetles (Coleoptera, Silphidae) of Russia: atlas and identification key]. Direkt-Media, Moskva & Berlin, 169 pp.
- RŮŽIČKA J. & SCHNEIDER J., 2004. - Silphidae. In: LÖBL, I. & SMETANA, A. (eds). *Catalogue of Palaearctic Coleoptera, Volume 2: Hydrophiloidea – Histeroidea – Staphylinoidea*. Apollo Books, Stenstrup, 229–237.
- RŮŽIČKA J., 2015. - Silphidae. In: LÖBL, I. & LÖBL, D. (eds). *Catalogue of Palaearctic Coleoptera. Vol. 2/1. Hydrophiloidea- Staphylinoidea. Revised and Updated Edition*. Brill, Leiden & Boston, 291–304.