

On the occurrence of *Suphrodytes dorsalis* (Fabricius, 1787) and *Suphrodytes figuratus* (Gyllenhal, 1826) (Coleoptera: Dytiscidae) in Belgium with notes on the habitat

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Abstract

Recent research (BERGSTEN *et al.*, 2012) has shown that the former *Suphrodytes dorsalis* (Fabricius, 1787) actually contains two species. Re-examination of most Belgian material revealed that both species are present in Belgium. In this article, the distribution of *Suphrodytes dorsalis* (Fabricius, 1787) and *Suphrodytes figuratus* (Gyllenhal, 1826) are mapped and discussed. Furthermore, the difference in habitat preference in Belgium is given.

Keywords: Dytiscidae, *Suphrodytes figuratus*, *Suphrodytes dorsalis*, distribution, habitat.

Samenvatting

Recent onderzoek (BERGSTEN *et al.*, 2012) heeft aangetoond dat *Suphrodytes dorsalis* (Fabricius, 1787) in feite twee soorten omvat. Herdeterminatie van het meeste Belgische onthulde dat beide soorten in België voorkomen. In dit artikel wordt de verspreiding van *Suphrodytes dorsalis* (Fabricius, 1787) en *Suphrodytes figuratus* (Gyllenhal, 1826) in kaart gebracht en besproken. Verder wordt het verschil in habitatvoorkeur in België beschreven.

Résumé

Des recherches récentes (BERGSTEN *et al.*, 2012) ont montré que l'espèce, que l'on nommait anciennement *Suphrodytes dorsalis* (Fabricius, 1787), comprend en fait deux espèces, celle-ci et *Suphrodytes figuratus* (Gyllenhal, 1826). En réexaminant la plupart du matériel belge nous avons constaté que ces deux espèces sont présentes en Belgique. Dans cet article, la distribution de chacune d'elle est cartographiée et discutée. En outre, leur préférence concernant l'habitat en Belgique est décrit.

Introduction

The genus *Suphrodytes* Gonzis, 1914 was formerly known as monotypic, containing only *S. dorsalis* (Fabricius, 1787). Recent research (BERGSTEN *et al.*, 2012) revealed that *S. dorsalis sensu lato* actually consist out of two species: *Suphrodytes dorsalis* (Fabricius, 1787) and *S. figuratus* (Gyllenhal, 1826). The second species was first described by Gyllenhal as a distinct species but later synonymized with *S. dorsalis*. These two species have a very similar Palearctic distribution and occasionally occur together in the same waterbodies.

The species can easily be distinguished by 1) the colour of the underside, 2) the colour of the head, 3) the front claws of the males, 4) the general shape of the body and 5) the colour pattern on the elytra and pronotum in better marked specimens. The head of *S. dorsalis* is usually entirely red, the abdomen is ventrally black and contrasting with the reddish thorax, while *S. figuratus* has black or darkbrown markings between the eyes, the abdomen and the thorax are ventrally uniformly testaceous. A complete re-description of both species is given by BERGSTEN *et al.* (2012).

BERGSTEN *et al.* (2012) re-examined more than 1200 specimens from nine different museum collections. The few Belgian specimens they could examine all belonged to *S. dorsalis sensu stricto*. Re-examination of most Belgian material by the first two authors revealed that both species are present in Belgium.

To determine the distribution of this species-complex in Belgium, 640 specimens in the following collections were reassessed:

CKS: Collection K. Scheers (294 specimens)

CNT: Collection N. Thys (19 specimens)

RBINS: Collection RBINS (Royal Belgian Institute of Natural Sciences) (325 specimens)

VMM: Collection VMM (Vlaamse Milieu Maatschappij) (2 specimens)

Occurrence in Belgium

In total, 640 specimens were reassessed of which 419 were assigned to *Suphrodytes figuratus* and 221 to *S. dorsalis*. The percentage of *S. dorsalis* and *S. figuratus* in collections seems to be similar in old and recent collections.

Both species have their main distribution in Belgium in the low lying northern half, especially in the central area (Fig. 1). *Suphrodytes dorsalis* seems to be more confined to this central region than its sister species with only three (older) records outside this region. *S. figuratus* is the more common of the two and the records of this species are more scattered across the area.

In *S. dorsalis* there is a difference in the historical and recent distribution. Historical records (pre 1975) of this species are scattered across the whole centre of Flanders (like seen in Fig. 1a), but the recent records (post 1975) are confined to two, rather isolated regions: the western Campine region and the north-east of the province East-Flanders. The records of *S. figuratus* on the other hand are evenly distributed in both periods (with exception for the records in the Walloon region where recent data is lacking).

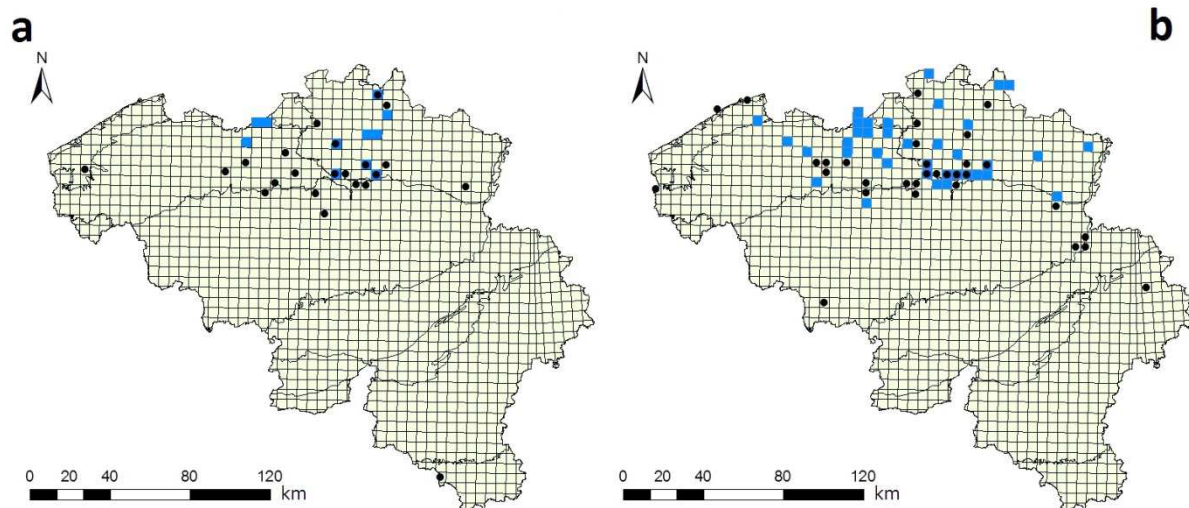


Fig. 1. Distribution of *Suphrodytes dorsalis* (a) and *Suphrodytes figuratus* (b) in Belgium (only reassessed records are shown). Black dots represent records pre 1975 and blue squares records post 1975.

Habitat preference

BERGSTEN *et al.* (2012) and FOSTER & FRIDAY (2011) both mention that the species often coexist in the same water body. Also in Belgium this is the case in more than one location. BERGSTEN *et al.* (2012) additionally mention that, even though the species can co-occur at the same locality, it is likely

that some differentiation in habitat preferences are present but this requires additional study. Although there has not been a specific study in Belgium on the ecology of water beetles, there have been more than one survey on water beetles where the abiotic ecology of the water bodies was assessed (SCHEERS, 2011; SCHEERS, unpublished data). According to this first data, the following conclusions can be made about the ecology of this species-complex:

Suphrodytes dorsalis is clearly associated with smaller mesotrophic and, at least temporary, groundwater-fed water bodies and fens, mostly well vegetated or structure rich by the presence of dead organic material. This species can occur in shaded as well as in open habitats. *Suphrodytes figuratus* is especially typical for shaded, enriched pools and ditches with a muddy bottom with a thick layer of decaying leaves. If the trees around the water are removed, this species can be still present and even abundant for years as long as a layer of decaying leaves or other organic matter is present. Both species have an overlap in less enriched, well vegetated, groundwater-influenced waters with a substrate of dead plant debris. The habitat preference can explain the distribution of both species for the major part.

Discussion

KEIRENS (1984) gave a distribution map of *Suphrodytes dorsalis sensu lato* in Belgium. In his map, he included all the records of the survey of Bosmans in the provinces of East- and West-Flanders. With exception of four records, we had no access to the material of that survey. Revisiting of the locations of the lost collection of Bosmans, as given in KEIRENS (1984) and new collecting in the provinces of West- and East-Flanders will fill the big gap in the western part of Flanders. Presumably, most if not all populations of *Suphrodytes* in this western part will be of *S. figuratus*. Furthermore, there is enough suitable habitat for *S. dorsalis* in the central of the province of Limburg, future research will probably reveal the presence of this species in that region. In *S. figuratus* the presented distribution shows basically where the habitat of the species is most common. Outside the central part of Flanders there are few low laying areas with more or less eutrophic ditches and pools in forested areas, and other shaded ponds with a thick layer of decaying organic material become very isolated. With this article we set the first step to the knowledge of the ecology of the species of *Suphrodytes*, but more research is needed to really determine the amplitudes of both species, not only in Belgium, but in the whole area where the genus occurs.

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