

Conclusion

La Belgique devient le huitième pays européen dont l'occurrence de *M. lindbergi* est avérée, constituant actuellement parmi les données les plus septentrionales connues pour l'espèce en Europe, un poste remarquablement avancé pour cette espèce afrotropicale et érémiennne.

L'observation belge d'un individu erratique de *M. lindbergi* s'insère peut-être dans le contexte des changements climatiques provoquant des flux puissants d'air chaud et doux, s'étalant dans la durée, orientés au secteur sud, depuis l'Afrique du Nord.

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Abdera biflexuosa (Curtis, 1829) new for all countries of the Benelux (Coleoptera: Melandryidae)

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Abstract

Abdera biflexuosa (Curtis, 1829) is reported as new for Belgium, the Netherlands and Luxembourg. *Abdera biflexuosa* lives on small, thin dead branches with fruiting bodies of *Peniophora quercina* (Russulales: Peniophoraceae) on living *Quercus* trees, especially *Quercus robur*. *Abdera biflexuosa* is most abundant in the border region of northern central Belgium and the southern provinces of the Netherlands.

Keywords: dead wood beetle, saproxylic beetle, *Peniophora quercina*, *Quercus*

Samenvatting

Abdera biflexuosa (Curtis, 1829) wordt hier gemeld als nieuw voor België, Nederland en Luxemburg. *Abdera biflexuosa* leeft op kleine, dunne dode takjes met vruchtlichamen van *Peniophora quercina* (Russulales: Peniophoraceae) op levende eiken, vooral *Quercus robur*. *Abdera biflexuosa* komt het talrijkst voor in het grensgebied van het noord-centrale deel van België en het zuid-centrale deel van Nederland.

Résumé

Abdera biflexuosa (Curtis, 1829) est signalé pour la première fois de Belgique, des Pays-Bas et du Grand-Duché de Luxembourg. Cette espèce vit sur des fines branches mortes de chênes vivants, en particulier *Quercus robur*, portant des fructifications de *Peniophora quercina* (Russulales: Peniophoraceae). *Abdera biflexuosa* est plus abondant dans la région frontalière du centre-nord de la Belgique et dans les provinces du sud des Pays-Bas que dans les autres régions.

Introduction

Melandryidae Leach, 1815 (Coleoptera) is a family of long-oval to oblong-oval beetles that live in fungal growths on deciduous trees (JAMES, 2018). In the older literature (KASZAB, 1969; LUCHT, 1987) the species of Melandryidae were part of the family Serropalpidae. Nowadays this family has been split into the families Tetratomidae and Melandryidae. Within Melandryidae, two subfamilies are recognized: Melandryinae (with most species) and Osphyinae. About 20 species of this family are known from the Benelux (NIKITSKY & POLLOCK, 2007; NIKITSKY, 2020). *Abdera* Stephens, 1832 is part of the Melandryinae.

In the genus *Abdera* three species are mentioned from Belgium: *A. quadrifasciata* (Curtis, 1829), *A. affinis* (Paykull, 1799) and *A. flexuosa* (Paykull, 1799). Two species are known from the Netherlands (*A. affinis*, *A. flexuosa*), and one from Luxembourg (*A. quadrifasciata*) (NIKITSKY & POLLOCK, 2007; NIKITSKY, 2020; VORST, 2010). The closely related species *Wanachia triguttata* (Gyllenhal, 1810) is often assigned to the genus *Abdera*, with *Wanachia* then considered a subgenus e.g. in

KASZAB (1969) and VORST (2010), but the most recent taxonomic works treat it as a separate genus (NIKITSKY & POLLOCK, 2007; NIKITSKY, 2020).

There has been some confusion regarding nomenclature. *Abdera bifasciata* Marsham, 1802 is used as the valid name in the first catalogue of Palaearctic beetles (NIKITSKY & POLLOCK, 2007), but in the errata (LÖBL & SMETANA, 2010) this was corrected: "Use *Abdera biflexuosa* (Curtis, 1829) as the valid name for *Abdera bifasciata* Marsham, 1802. *Abdera bifasciata* Marsham was originally published as *Mordella bifasciata*, preoccupied by *Mordella bifasciata* Fabricius, 1801. Add in synonymy of *A. biflexuosa* (Curtis, 1829): *bifasciata* Marsham, 1802: 493 (*Mordella*) [HN]". This was as such corrected in the second edition (NIKITSKY, 2020), but due to a new error in the layout, *A. bifasciata* still seems to be a valid species in this catalogue.

Abdera biflexuosa was included in the key to the Belgian *Abdera* species in a publication mentioning *Abdera affinis* as new for Belgium, but without any further information (THIEREN, 2007). This author did not know any specimens of *A. biflexuosa*, and probably relied on the catalogues available at the time (Thieren, pers. comm. 2022). However, no catalogues mentioning the species from the Benelux could be found (LUCHT, 1987; BÖHME, 2005), so we must consider this an error, and consider *A. biflexuosa* was never mentioned for the Benelux.

We indicate here how the species can be recognized and discuss its distribution, habitat, niche and phenology in the Benelux.

IDENTIFICATION

The body of *A. biflexuosa* is black to brown except for the elytra which have wavy yellowish bands (Fig. 1). Once familiarised with its appearance, this distinctive appearance can be used to identify *A. biflexuosa* in the field. Just like *A. biflexuosa*, specimens of *A. flexuosa* have wavy bands on the elytra, but the bands are black; the elytra are reddish yellow and the pronotum isn't unicoloured.

More thoroughly *A. biflexuosa* can be differentiated from the other *Abdera* species occurring in the Benelux with the keys provided by KASZAB (1969), THIEREN (2007), LOMPE (2019) and DUFF (2020), using the following characteristics. Antennomere 3 is hardly longer than antennomere 2 in *A. biflexuosa*, which separates it from *A. flexuosa* and *A. affinis*, in which antennomere 3 is at least twice as long as antennomere 2. The apical segment of the maxillary palps is ovoid in *A. biflexuosa*, as opposed to *Wanachia triguttata*, which has axe-shaped apical segments of the maxillary palps. The pronotum of *A. biflexuosa* is unicoloured and the elytra are separately rounded at the apex, which separates it from *A. quadrifasciata*.

DISTRIBUTION

In Europe, *A. biflexuosa* is known from Austria, Bulgaria, Czechia, Denmark, Estonia, France, Germany, Great-Britain, Italy, Portugal, Slovakia, Slovenia and Spain (SILFVERBERG, 2004; MARTINS DA SILVA *et al.*, 2006; DUFF, 2012; KONVIČKA & BOBOT, 2018; NIKITSKY, 2020;). In North Africa, it occurs in Algeria and Tunisia (NIKITSKY, 2020). Belgium, the Netherlands and Luxembourg are here added to this list.

The species is known to be present in all countries bordering the Benelux. In France, *A. biflexuosa* is considered to be common and widely distributed (BRUSTEL, 2014; BOUGET *et al.*, 2019). In England and Wales, the species is uncommon but sometimes locally abundant (DUFF, 2020). In Germany, *A. biflexuosa* was first recorded in 1993 in Hessen, later discoveries were made in Schleswig-Holstein, Rheinland-Pfalz and Saarland. The species is considered (very) rare in Germany (KÖHLER, 2000; LILLIG & EISINGER, 2020).



Fig. 1. *Abdera biflexuosa*, dorsal view, Belgium, Antwerpen, Berendrecht, Reigersbos, 17.V.2020. © K. Gielen.



Fig. 2. The fungus *Peniophora quercina* on a dead branch of *Quercus robur*. Belgium, Wommelgem, 25.V.2020. © K. Gielen.

ECOLOGY

Abdera biflexuosa is known to occur predominantly in ancient woodland and pasture woodland in England and Wales (ALEXANDER, 2002; DUFF, 2020). The species is an obligate saproxylic and mycetophagous beetle, which lives on fungi of the genus *Peniophora* in thin dead branches of deciduous trees (BOUGET *et al.*, 2019), especially *Peniophora quercina* (Pers.) Cooke, 1879 on *Quercus* sp. (KOCH, 1989).

The fungus *Peniophora quercina* (Fig. 2) is a pioneer species on living or recently dead branches, still attached to the tree. It has a preference for the distal parts of those branches. It causes extensive whiterot (BODDY & RAYNER, 1983).

Abdera biflexuosa can be found by beating branches, mainly of oak, and in the past was found regularly by beating oak faggots (PÉNEAU, 1913; GALIBERT, 1932; HOULBERT & BARTHE, 1934-1935).

GRUARDET (1930) mentions the species on branches of oak, birch (*Betula* sp) and beech (*Fagus* sp), and GALIBERT (1932) bred the species, in large numbers, from branches of oak, beech, apple (*Malus* sp.) and pine (*Pinus* sp.).

Material and methods

The niche of dead small branches on living oaks was examined mainly by beating, in 2020 and 2021. A call for collaboration in Belgium and in the Netherlands was made (in Sektie Everts Info 128, 2020 - 131, 2021).

Most specimens were gathered by beating branches and collecting beetles in a beating tray. At one location in the Netherlands and Luxembourg, *A. biflexuosa* was collected in flight interception traps. One Belgian respondent reported *A. biflexuosa* from carnetting: driving a car while a large net is attached to the roof of the car, collecting flying beetles.

The citizen science platforms waarnemingen.be, waarneming.nl and iNaturalist were checked for records. The biodiversity data platform GBIF was checked for records.

Results

MATERIAL EXAMINED.

BELGIUM

Prov. Antwerpen : 1 ex., Antwerpen, Berendrecht, Reigersbos (51.337173, 4.311655), 17.V.2020. In a park in a meadow bordered with oaks and pollarded oaks. Beaten from a dead branch on living *Quercus robur*. K. Gielen leg., det. & coll.; 1 ex., Antwerpen, Wolvenberg (51.195596, 4.434502), 27.V.2020. Roadside/forest edge. Beaten from dead branches on living *Quercus robur*. K. Gielen leg., det. & coll. ; 19 ex., Antwerpen, Wolvenberg (51.194065, 4.427430), 29.V.2020. Roadside/forest edge. Beaten from dead branches on living *Quercus robur*. K. Gielen (3 ex.), K. Smets (16 ex.) leg., det. & coll.; 2 ex., Antwerpen, Wolvenberg (51.19351, 4.42761), 29.V.2021. Roadside/forest edge. Beaten from dead branches on living *Quercus robur*. K. Gielen leg., det. & coll.; 1 ex., Hoboken, Hobokense Polder (51.1876, 4.3472), 7.VI.2020. Beaten from branches of *Quercus robur*. R. Hendrickx leg., det. & coll.; 2 ex., Hoboken, Hobokense Polder (51.19195, 4.34895), 31.V.2021. In forest meadow on dead branches of living *Quercus robur*. K. Gielen leg., det. & coll.; 3 ex., Ekeren, Oude Landen (51.27346, 4.42717), 10.VI.2021. In forest meadow on dead branches of living *Quercus robur*. K. Gielen leg., det. & coll.; 3 ex., Brasschaat, Klein Schietveld (51.34037, 4.51297), 01.VI.2020. In open forest. On dead branch of living solitary *Quercus robur*. K. Gielen leg., det. & coll.; 7 ex., Gierle, Grotenhout (51.281825,

4.875757), 03.VI.2020. In a forest edge. On small dead branches on living *Quercus robur*, and beaten from dead fallen crown of *Quercus robur*. K. Gielen (3 ex.) & K. Smets (4 ex.) leg., det. & coll.; 2 ex., Gierle, Grotenhout (51.291797, 4.907379), 28.VI.2020. In a forest reserve. In a forest edge. Beaten from a big dead branch on living *Quercus robur*. K. Gielen & K. Smets leg., K. Gielen det. & coll. (1 ex.), KBIN coll. (1 ex., I.G. 34.463); 2 ex., Kalmthout, Arboretum Kalmthout (51.393168, 4.463335), 11.VII.2020. In an arboretum. Beaten from dead branches on living *Quercus robur*. K. Gielen leg., det. & coll.; 3 ex., Lier, Zevenbergen (51.139761, 4.533549), 27.V.2020. In a forest edge of an oak forest. Beaten from small dead branches. K. Gielen leg., det. & coll.; 3 ex., Ranst, Zevenbergen bos (51.20125, 4.55715), 11.VI.2021. In a forest on dead branches of living *Quercus robur*. K. Gielen leg., det. & coll.; 1 ex., Rumst, Predikherenvelden, Het Boske (51.111344, 4.389037), 22.V.2020. Roadside with *Quercus*. Beaten from dead branches on living *Quercus robur*. K. Gielen leg., det. & coll.; 2 ex., Schilde, Heerbaan (51.246156, 4.547734), 25.V.2020. In a forest. Beaten from thin dead branches of living *Quercus robur*. K. Gielen leg., det. & coll. (1 ex.), KBIN coll. (1 ex., I.G. 34.463); 3 ex., Schoten, Fort van Schoten (51.28628, 4.53083), 31.V.2020. In open oak forest. K. Gielen leg., det. & coll.; 5 ex., Schoten, Peerdsbos (51.269159, 4.484240), 09.VI.2020. In a forest edge. K. Gielen leg., det. & coll.; 4 ex., Schoten, Peerdsbos (51.27122, 4.48785), 20.VI.2020. In a forest beaten from dead branches on living *Sorbus aucuparia*. K. Gielen leg., det. & coll.; 4 ex., Sint-Job in't Goor, Kanaal Dessel-Schoten (51.30803, 4.58357), 31.V.2020. Beaten from thin dead branches on living *Quercus robur* in forest edge. K. Gielen leg., det. & coll.; 3 ex., Westerlo, De Beeltjens (51.09221, 4.90116), 15.VI.2021. Forest edge. Beaten from dead branches on living *Quercus robur*. K. Smets leg., det. & coll.; 14 ex., Wommelgem (51.211072, 4.500197), 25.V.2020. On big solitary *Quercus robur* and smaller *Quercus robur* trees in the border of a highway. On small dead branches. K. Gielen leg., det. & coll. (11 ex.), K. Smets coll. (3 ex.), KBIN coll. (1 ex., I.G. 34.463).

Prov. Oost-Vlaanderen : 2 ex., Aalter, Poeke, Kasteelpark van Poeke (51.04256, 3.44895), 6.VI.2021. Forest edge. Beaten from dead branches on living *Quercus robur*. K. Smets leg., det. & coll.; 4 ex., Destelbergen, Kasteel Succa (51.063879, 3.791701), 6.VI.2020. Forest edge. Beaten from dead branches of *Quercus robur*. K. Smets leg., det. & coll.; 9 ex., Waasmunster, Patotterij (51.123712, 4.067995), 6.VI.2020. Beaten from dead branches of *Quercus robur*. K. Smets leg., det. & coll.

Prov. Limburg : 1 ex., Hamont, Beverbeek (51.287808, 5.517412), 1.VI.2021, Carnetting, L. Crevecoeur leg., det. & coll.; 3 ex., Lummen, Duizendjarige Eik (50.991868, 5.162537) 7.VII.2020. In deciduous forest, beaten from a dead fallen crown of *Quercus robur*. K. Smets leg., det. & coll.; 12 ex., Pelt, De Watering (51.243490, 5.500550), 13.VI.2020. In forest edge. On dead branch of living *Quercus robur*. K. Gielen (3 ex.), K. Smets (5 ex.), L. Crevecoeur (2 ex.) & B. Bosmans (2 ex.) leg., det. & coll.

Prov. Vlaams-Brabant : 14 ex., Zemst, Wormelaar (50.98101, 4.44132), 05.VI.2021. Solitary wayside oak in orchard, dead branch of living *Quercus robur*. K. Gielen (5 ex.) & K. Smets (9 ex.) leg., det. & coll.

Prov. Hainaut : 1 ex., Courcelles (50.476724, 4.38756), 09.VI.2018. Beaten from *Quercus* in forested roadside of highway. D. Ignace & P. Limbourg leg. & det., D. Ignace coll.; 2 ex., Courcelles (50.476724, 4.387564), 30.VI.2019. Beaten from *Quercus* in forested roadside of highway. D. Ignace & P. Limbourg leg. & det., D. Ignace coll.

Prov. Brabant wallon : 2 ex., Genappe, Thy, Bois de la Tassenière (50.60918, 4.49969), 13.VI.2021. In an oak forest. On dead branches of living *Quercus robur*. K. Gielen leg.,

det. & coll.; 2 ex., Genappe, Ways (50.60932, 4.46157), 13.VI.2021. Roadside on dead branches of living *Quercus robur*. K. Gielen leg., det. & coll.

Prov. Liège : 1 ex., Modave, Fond d'Oxhe (50.52390, 5.34039), 23.VI.2021. In a forest on a dead standing *Quercus*. K. Gielen leg., det. & coll.

Prov. Luxembourg : 1 ex., Tellin, Resteigne, Dri les Miens (50.077344, 5.171960), 20.VI.2020. In a forest edge, beaten from branches of *Quercus robur*. K. Smets leg., det. & coll.; 1 ex., Tellin, Resteigne, Dri les Miens (50.077344, 5.171960), 13.VI.2021. In a forest edge, beaten from branches of *Quercus robur*. K. Smets leg., det. & coll.

THE NETHERLANDS

Prov. Zeeland : 23 ex., Clinge, Clingse bossen (51.26312, 4.0777), 16.VI.2020. On a parking site/forest edge. Beaten from small dead branches on living *Quercus robur* and in forest from dead branches on bigger living *Quercus robur* and from dead standing *Sorbus aucuparia*. K. Gielen (9 ex.) & K. Smets (14 ex.) leg., det. & coll.

Prov. Noord-Brabant : 3 ex., Bergeijk, De Plateaux (51.2687, 5.4050), 10.VI.2020. Beaten from dead branches on partly dead, fallen oak. R.Ph. Jansen (2 ex.) & J.C.P.M. van de Sande (1 ex.) leg., det. & coll.; 5 ex., Bergeijk, De Plateaux (51.2687, 5.4050), 13.VI.2021. Beating and sweeping vegetation. R.Ph. Jansen leg., det. & coll.; 1 ex., Breda, Mastbos, Kogelvanger (51.55551, 4.77145), 22.VI.2013. On shady muddy bank of pond with oak. O. Vorst leg., det. & coll.; 1 ex., Castelé, 't Merkske (51.41957, 4.82091), 13.VI.2015. Collected by knocking bushes and trees, dragging vegetation and under bark of dead branches. F. van Nunen leg., det. & coll.; 15 ex., Putte, Moretusbos (51.365316, 4.382728), 16.VI.2020. In *Pinus/Quercus* forest. Beaten from dead branches on living *Quercus robur* and from dead standing *Sorbus aucuparia*. K. Gielen (6 ex.) & K. Smets (9 ex.) leg., det. & coll.; 1 ex., Soerendonk, Kranenveld (51.30083, 5.53619), 12.VII.2021. Ruud en Betty van Middelkoop leg., R.Ph. Jansen det. Source: citizen science platform waarneming.nl first entered as *Abdera triguttata* now adapted to *Abdera* sp.; 14 ex., Tilburg, Kaaistoep (51.55014, 5.01624 and 51.54926, 5.01917), 2.VI - 28.VII.2021. On both locations malaise traps were placed in trees, leg. Joris Wellink, det. Tim Faasen, coll. Natuurmuseum Tilburg.

Prov. Limburg : 1 ex., Maasbree, Elsbeemden (51.38412, 6.02780), 13.VI.2020. F. van Nunen leg., det. & coll.; 13 ex., Sevenum, Groote Molenbeek (51.3810, 6.0060), 13.VI.2020. Beaten from *Quercus* sp. R.Ph. Jansen (1 ex.), D. Belgers, F. van Nunen (7 ex.) & O. Vorst (3 ex.) leg., det. & coll., Nationaal Natuurhistorisch Museum Naturalis coll. (1 ex., RMNH.INS.1486050); 1 ex., Venlo, Océ Weerd (51.39344, 6.15719), 6.VII.2021. Probably beaten from dead branches of *Quercus*, *Populus* or *Fraxinus*. T. Martens leg., R.Ph. Jansen det. Source: citizen science platform waarneming.nl entered as *Abdera* sp.

GRAND DUCHY OF LUXEMBOURG

1 ex., Krokelschaff, Frisange (49.51983, 6.19572), 26.V - 04.VII.2008. In Rahn-Eklektor (window trap). Along a line of old oak trees. R. Gerend leg., det. & coll.; 3 ex., Krokelschaff, Frisange (49.51983, 6.19572), 2.VII.2009. Beaten from branches. Along a line of old oaks with some veteran trees surrounded by pasture overlooking stream valley (Gander). R. Gerend leg., det. & coll.

NUMBER OF SPECIMENS

In total 219 specimens of 40 locations were included in this study. The largest number of locations (16) and specimens (82) was recorded in the Antwerp province of Belgium, mainly within distance by bicycle from the address of the first author. This is followed by Noord-Brabant (6 locations and 42 specimens) in the Netherlands, which borders Antwerp province to the north.

OLDEST RECORDS IN THE BENELUX

In 2008, a specimen of *A. biflexuosa* was collected by Raoul Gerend in Luxembourg with a flight interception trap, which was placed alongside a large oak, partly hollow. In the Netherlands, the oldest finding of *A. biflexuosa* that is known to us, was done in 2013: Oscar Vorst collected *A. biflexuosa* on an excursion of the Sektie Everts of the Dutch Entomological Society (JANSEN *et al.*, 2014) on a shady bank of a puddle in an oak forest near Breda. In Belgium, the oldest confirmed findings of *A. biflexuosa* were made by David Ignace & Pol Limbourg in 2018 in Courcelles (Hainaut) during their ongoing survey of that region.

Discussion

KNOWN DISTRIBUTION IN THE BENELUX (Fig. 3)

In the Benelux, *A. biflexuosa* seems to be most abundant in the border region of northern Belgium and the southern provinces of the Netherlands. Observers' bias certainly explains partially why most of the locations and specimens were found in the province of Antwerp, within bicycle distance of the first author's home. Towards the western coastal regions of the Benelux records seem to become scarce, but this part of the Benelux was undersampled. When found in the province of Oost-Vlaanderen, many specimens were observed, as abundant as in Antwerp. On the southeastern higher altitudes of the Ardennes in Belgium and Luxembourg, the species seems to become scarcer, although undersampling might also be an issue here. However, when the species was present here, it occurred in fewer specimens. As far as we know, it has not yet been observed in the Netherlands north of the river Meuse.

PHENOLOGY (Fig. 4)

Adults of *A. biflexuosa* can be found in the Benelux for a relatively short period; from the second half of May to the end of July, with an optimum in the first half of June, and with progressively less records during July. In figure 4 the records per 10 days period are shown. There were no outliers. All records from the month of May are from Belgium. This corresponds with the findings of GALIBERT (1932), who bred specimens from dead branches: between May 20th and July 20th.

DESCRIPTION OF HABITAT AND NICHE OF *A. BIFLEXUOSA* IN THE BENELUX

In the Benelux, *A. biflexuosa* can be found in ancient forests and pasture woodland as described from neighbouring countries. However, it can also be found on young oak trees bordering highways and in urban areas (Fig. 5). We can conclude that the quality of the habitat is of little importance, as long as its preferred niche of living oak trees with small dead branches with fruiting bodies of *Peniophora quercina* is present within the habitat.

Abdera biflexuosa was almost always found on thin dead branches of living *Quercus robur*. On three occasions, specimens were beaten from branches in a lying dead crown of *Quercus robur*. At two Dutch locations and one Belgian location, *A. biflexuosa* was also found on standing dead *Sorbus aucuparia*. These observations and the breeding experiments of Galibert in the previous century of *A. biflexuosa* on other tree species open the possibility that the niche of the species might be broader than just *Peniophora quercina* on oak trees.

RARE SPECIES OR OVERLOOKED NICHE?

In the five years period between the first record in Luxembourg (2008) and the record in the Netherlands (2013), *A. biflexuosa* has most probably been overlooked in Belgium. It took until 2018 to confirm its presence in Belgium. The niche of small dead branches infected by fungi

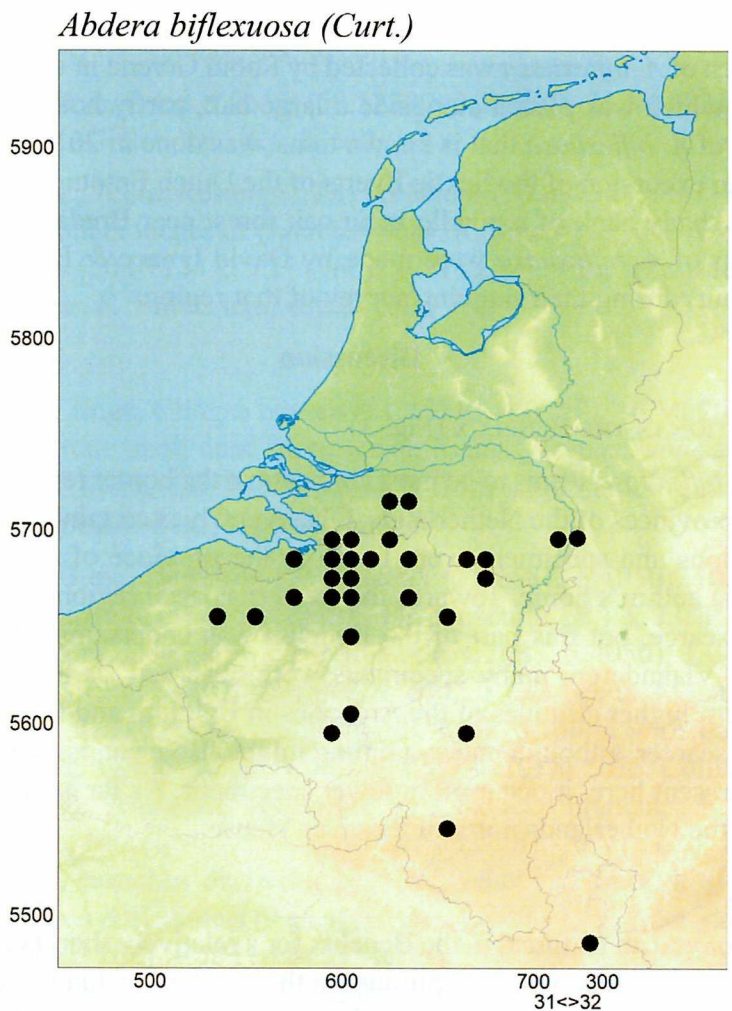


Fig. 3. Distribution of *Abdera biflexuosa* in the Benelux.

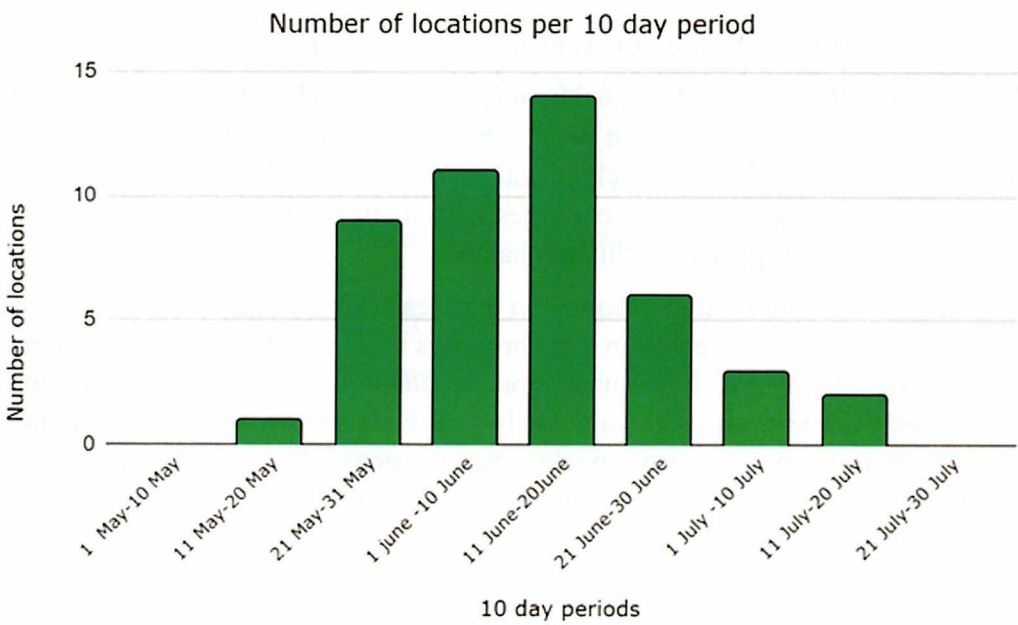


Fig. 4. The number of locations where *Abdera biflexuosa* was found in the Benelux per 10 days over the years 2009-2021. Records from traps are excluded from this graph because these data could not be fitted in the 10 day periods.



Fig. 5. The habitat of *Abdera biflexuosa* in Belgium, Wommelgem, 25.V.2020 in a suburban area. ©. K. Gielen.

on living *Quercus* trees is probably undersampled. Beating has proven to be a good method of ascertaining the presence of *A. biflexuosa* but branches of this kind are not always within easy reach without additional equipment (ladders). A lot of the records described here are from forest edges or freestanding trees, where the niche is more readily within the entomologist's reach. This may also explain why *A. biflexuosa* is generally found on lower dead branches which have been shaded out by the tree's own canopy in pasture woodland (ALEXANDER, 2002; DUFF, 2020), as this is simply where the species can be found without special equipment.

Abdera biflexuosa could be present on more locations, living out of reach hidden in treetops, like the records in The Kaaistoep made with treetop traps seem to suggest (Fig. 6).

On the other hand, the habitat of this species occurring in small dead branches of mainly oak trees has been known for a very long time, as stated by many early French authors like PÉNEAU (1913), GRUARDET (1930), GALIBERT (1932) and HOULBERT & BARTHE (1934-1935). This may be a partial explanation why the species is mentioned as quite common in France: French entomologists knew how to find it, thanks to old French literature which was not read as much in English- or German-speaking countries.

The undersampled small branches might explain why the beetles occupying this niche are overlooked or perceived as being scarce. This is also the case with *Phloiophilus edwardsii* Stephens, 1830 (Phloiophilidae), which can be found quite easily in the Benelux in winter on the lowest dead branches of oaks infected with *Peniophora quercina*, but which is seldomly recorded (VAN WIELINK *et al.*, 2010). Putting this to the test, six trees where *A. biflexuosa* was found in Belgium were revisited during the early months of 2022. On four examined trees,

Phloiophilus edwardsii was found (Fig. 7). *Phloiophilus edwardsii* seems to occupy the same trees as *A. biflexuosa*, but in a seasonally separated niche.

Another example is *Eulagius filicornis* (Reitter, 1887) (Mycetophagidae), which lives in almost the same niche (small dead oak branches attached to the tree) on the fungi *Stereum hirsutum* and *Stereum rugosum* (GIELEN & SMETS, 2020). *Eulagius filicornis* and *A. biflexuosa* can sometimes be found together in the same location or even the same tree. This was the case for at least six locations where *A. biflexuosa* was found. Although the species can be found living in close proximity to each other, they each occupy a slightly different niche determined by their preference for different host fungi.

EFFECTS OF CLIMATE CHANGE?

Just like *Eulagius filicornis* (BOUGET *et al.*, 2019; GIELEN & SMETS, 2020) and many other insect species, *A. biflexuosa* seems to be expanding northwards driven by climate change and possibly an altered forest management, although the host fungus *Peniophora quercina* is and always was very common in the Benelux. It could be however that not every branch with *Peniophora*



Fig. 6. A tree-top malaise trap in which *Abdera biflexuosa* was found in the Netherlands, Tilburg, De Kaaistoep (province of Noord-Brabant), June - July 2021. © Tim Faasen.



Fig. 7. Habitat and niche of *Phloiophilus edwardsii* (Antwerpen, Wolvenberg, 03.II.2022), where *Abdera biflexuosa* was captured in May 2020 and 2021.

quercina is available for *A. biflexuosa*. The niche occupied by *A. biflexuosa* is probably sensitive to changing abiotic factors like humidity and temperature, and so is not very well buffered against the elements. The fruiting bodies of *P. quercina* are waxy and cling to the branch when humid, but change in appearance under dry conditions: under those conditions the fruiting body becomes brittle and curls up at the sides, revealing its darker underside (TANCHAUD, 2017). This phenomenon could influence the little-known biology of *A. biflexuosa*, and could explain why *A. biflexuosa* seemed to be more abundant during the drier 2020 season as compared to the extremely wet 2021 season.

It will be interesting to note if, and how fast, the species spreads more northwards in the Netherlands, and how it will react to future climatic variations.

Sampling of small dead branches in the canopy of oaks would also be interesting to carry out, not only to discover if *A. biflexuosa* indeed is present here, but possibly for discoveries of many other insects.

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A new species of *Stilpon* from Cyprus (Diptera: Hybotidae)Elias DE BREE¹ & Patrick GROOTAERT²¹ Amsterdam, the Netherlands, (corresponding author: ectemnius@gmail.com)² Royal Belgian Institute of Natural Sciences, O.D. Taxonomy and Phylogeny, Entomology, Vautierstreet 29, B-1000 Brussels, Belgium. (e-mail: pgrootaert@yahoo.co.uk)

Abstract

Stilpon vanecki sp. nov. is described from Cyprus. It is characterized by the black apical half of the fore tibia and a broadly forked tip of the right epandrial lamella.

Keywords: Hybotidae, *Stilpon*, Cyprus, new species

Samenvatting

Stilpon vanecki sp. nov. wordt beschreven van Cyprus. Kenmerkend voor de soort is de zwarte apicale helft van de voorschenen en een breed gevorkte top van de rechter epandriale lamel.

Résumé

Stilpon vanecki sp. nov. est décrite de Chypre. Elle est caractérisée par la moitié apicale noire du tibia antérieur et une extrémité largement fourchue de la lamelle épandriale droite.

Introduction

Stilpon Loew, 1859 is a genus of very small predatory flies from the family Hybotidae, usually measuring 1.0 to 1.5 mm. Adults inhabit various biotopes but most often occur on the surface of the soil or in low vegetation. Larvae develop in soil and in litter (PRZHIBORO & SHAMSHEV, 2007). Twelve species are known from the West Palaearctic Region (GROOTAERT & SHAMSHEV, 2003; SHAMSHEV & GROOTAERT, 2005; GROOTAERT *et al.*, 2021). In addition, CHVÁLA (1988) mentions two undescribed species, remarkably both from Islands, i.e., Malta and Rhodes. In the present paper, a new species is described, found in four localities in Cyprus.

Material and methods

All specimens were collected with Malaise traps by André van Eck and stored in 70% ethanol. The holotype and paratypes from Saittas are deposited in the Royal Belgian Institute of Natural Sciences, Brussels, Belgium (RBINS). The two male paratypes from Pafos are deposited in the collections of Naturalis Biodiversity Center, Leiden, the Netherlands (RMNH).

Results

Taxonomy

Family **Hybotidae** Macquart, 1823
 Subfamily **Tachydromiinae**
 Tribe **Drapetini** Collin, 1961
 Genus *Stilpon* Loew, 1859

Type species : *Tachydromia graminum* Fallén, 1815

Stilpon vanecki sp. nov.

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Figs 1-2