

Three halophilous Muscidae new for Belgium (Diptera : Muscidae)

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Abstract

This paper describes the first records of the halophilous Muscidae *Phaonia fusca* (Meade, 1897), *Spilogona biseriata* (Stein, 1916) and *Limnospila albifrons* (Zetterstedt, 1849) for Belgium.

Keywords : Muscidae, halophilous, species new for Belgium, *Phaonia fusca*, *Spilogona biseriata*, *Limnospila albifrons*.

Samenvatting

De eerste Belgische records van de halofiele Muscidae *Phaonia fusca* (Meade, 1897), *Spilogona biseriata* (Stein, 1916) en *Limnospila albifrons* (Zetterstedt, 1849) worden beschreven.

Résumé

Phaonia fusca (Meade, 1897), *Spilogona biseriata* (Stein, 1916) et *Limnospila albifrons* (Zetterstedt, 1849) sont trois espèces de Muscidae halophiles nouvelles pour la faune belge. Nous les décrivons ici.

Introduction

Saline habitats form an extremely stressful environment. High salt concentrations and sometimes also tidal influences produce harsh living conditions. This affects not only the vegetation, but also gives rise to special invertebrate assemblages with salt-tolerant species. A high proportion of the saline biodiversity is represented by Diptera, including Muscidae (CHANDLER, 2010). However, in Belgium information on halophilous Muscidae is scarce. A brackish ditch in the Jeronimuspolder (Sint-Laureins) is probably the only locality that has been thoroughly investigated. An inventory there with a Malaise trap in 2011 yielded *Coenosia antennata* (MARTENS, 2012, MARTENS *et al.*, 2013) as a halophilous species new for Belgium. In this paper, the first Belgian records of three other halophilous Muscidae are described.

Material and methods

All specimens were obtained by sweeping the vegetation with a net. Identification is based on GREGOR *et al.* (2002). The collected specimens are stored in the private collection of the author.



Fig. 1. Collection site of *Phaonia fusca* in 'Het Zwin'.

Fig. 2. Collection site of *Phaonia fusca* in the embryonic dunes in front of 'Het Zwin'.

Fig. 3. Collection site of *Spilogona biseriata* in a salt meadow in the inner port of Zeebrugge.

Fig. 4. Collection site of *Spilogona biseriata* on a sea sand raised area in the inner port of Zeebrugge.

Results

Phaonia fusca (Meade, 1897)

MATERIAL EXAMINED : Knokke-Heist, Het Zwin, 23.VII.2012, 4♂ & 1♀, leg., det. & coll. C. Martens ; Knokke-Heist, Embryonic dunes in front of 'Het Zwin', 23.VII.2012, 1♂ & 1♀, leg., det. & coll. C. Martens.

Phaonia fusca is a *Phaonia* of about 6 mm, with several hairs on the meron below the posterior spiracle, a haired prosternum, a long-plumose arista and largely blackish legs (GREGOR *et al.*, 2002). According to CHANDLER (2010) *Phaonia fusca* is a salt marsh specialist. The species is known only from Great Britain, France and The Netherlands (GREGOR *et al.*, 2002 ; PONT, 2013).

Phaonia fusca was found in 'Het Zwin' (Fig. 1) and in the embryonic dunes in front of 'Het Zwin' (Fig. 2). 'Het Zwin' is the largest and most important tidal salt marsh site in Belgium. Four males and one female were collected here in a zone with many flowering *Limonium vulgare* Mill. (Fig. 1). Other abundant plant species were *Juncus gerardii* Loisel., *Puccinellia maritima* (Huds.) Parl., *Halimione portulacoides* (L.) Aell., *Glaux maritima* L., *Suaeda maritima* (L.) Dum. and *Spergularia media* (L.) C. Presl subsp. *angustata* (Clavaud) Kerguelen et Lambinon.

In the embryonic dunes one male and one female were collected. Here the vegetation is dominated by *Cakile maritima* Scop. and *Elymus farctus* (Viv.) Runemark ex Melderis subsp. *boreoatlanticus* (Simonet et Guinochet) Melderis and contains species such as *Salsola cali* L., *Honckenya peploides* (L.), *Atriplex prostrata* Boucher ex DC. and *Leymus arenarius* (L.) Hochst.

***Spilogona biseriata* (Stein, 1916)**

MATERIAL EXAMINED : Brugge, Inner port of Zeebrugge, WAL, 2.IX.2012, 1♀, leg., det. & coll. C. Martens ; Brugge, Inner port of Zeebrugge, OTSO, 2.IX.2012, 1♀, leg., det. & coll. C. Martens.

Spilogona biseriata is a *Spilogona* of 3.5-5 mm with the acrostichal setulae biserial and fairly long. Males have trapezoid spots on tergites 3 and 4. In the females the spots are more circular (GREGOR *et al.*, 2002). *Spilogona biseriata* occurs on sea coasts and occasionally inland in saline areas. In Great Britain larvae and puparia were found under *Enteromorpha* (L.) Link mats on saline mud (SKIDMORE, 1985 ; GREGOR *et al.*, 2002). According to CHANDLER (2010) the species is associated with mildly brackish dykes. *Spilogona biseriata* is an European species that occurs from France and Turkey to Great Britain and Sweden (GREGOR *et al.*, 2002).

We collected a female specimen of *Spilogona biseriata* at two different localities in the inner port of Zeebrugge. The first specimen was collected in the subarea called 'WAL' which is a narrow strip of mainly salt meadows enclosed by the channel Brugge-Zeebrugge in the west and the sea sand raised area 'Hoge Noen' in the east. We obtained the specimen in the most northern salt meadow (Fig. 3) which is characterized by high groundwater levels and very high salt concentrations. The dominant plant species at the collection locality are *Salicornia europaea* s.l. L. and *Aster tripolium* L.

The second specimen was collected in the subarea called 'OTSO' (Fig. 4). This area was raised with sea sand around 2000. Originally salt concentrations were high here, but they diminish year after year as a result of leaching out. Today salt concentrations are much lower than at the first collection site. Moreover this site is much drier than the first site. The vegetation is dominated by *Calamagrostis epigejos* (L.) Roth, but contains species that are fairly salt tolerant, such as *Scirpus maritimus* L., *Lotus corniculatus* L. *subsp. tenuis* (Waldst. et Krr. ex Willd.) Berher, *Parentucellia viscosa* (L) Caruel and *Gnaphalium luteoalbum* L. Locally there is shrub encroachment of *Salix* L. and *Hippophae rhamnoides* L.

***Limnospila albifrons* (Zetterstedt, 1849)**

MATERIAL EXAMINED : Brugge, Lissewege, Monnikenwerve, 1.VIII.2012, 1♀, leg., det. & coll. C. Martens.

Limnospila albifrons is the only species of the genus *Limnospila* in Europe. The genus is characterised amongst other things by a broad frons in both sexes, one orbital seta on each fronto-orbital plate and two pairs of presutural dorsocentral setae. *Limnospila albifrons* is 2.5-4 mm, has a predominantly silvery white dusted head, a pubescent arista and black antennae and palpi. The abdomen is greyish dusted, with a brown midline and subtriangular spots on tergites 3 and 4 (GREGOR *et al.*, 2002). *Limnospila albifrons* is a salt marsh specialist (GREGOR *et al.*, 2002 ; CHANDLER, 2010). It is a Holarctic species that occurs in Europe from Spain and Romania to Fennoscandia (GREGOR *et al.*, 2002).

We collected one female in a pristine salt meadow of the nature reserve Monnikenwerve in Lissewege (Brugge). This site is situated not far from the first collection locality of *Spilogona biseriata*, but lies at the west side of the channel Brugge-Zeebrugge and is not affected by the port. At the collection locality of *Limnospila albifrons* the dominant plant species is *Aster tripolium* L.

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