

First record of *Fucellia maritima* (Haliday, 1838) (Diptera, Anthomyiidae) populations in Portugal

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This paper reports the first record of an established population of the kelp fly *Fucellia maritima* (Haliday, 1838) in Barra beach, Aveiro, Portugal. A total of 27 specimens were collected with sweep-nets from sea wrack dominated by *Fucus* sp. and the invasive water hyacinth *Eichhornia crassipes* (Mart) Solms. The individuals of this species were observed throughout the whole year, overflying the beach wrack in this coastal area.

Key words: Anthomyiidae, *Fucellia maritima*, kelp fly, first occurrence, sea wrack, Portugal.

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Introduction

The kelp fly *Fucellia maritima* (Haliday, 1838), is a Diptera species of the family Anthomyiidae. This family has over 2000 species and 53 genera, distributed around the world (Pape et al. 2011). Members of this family have a wide range of feeding habitats, from parasitism, kleptoparasitism, saprophagy to predation. Presently, the family is divided in the subfamilies Anthomyiinae, Myopininae and Pegomyinae, with this last two often combined in Pegomyinae (Marshall 2012).

The subfamily Anthomyiinae is home to the genus *Fucellia* Robineau-Desvoidy, 1841, which is a specialized genera associated with sea wracks, composed of decomposing algae (Marshall 2012). Their larval stage live in brown seaweeds such as *Fucus* sp., washed by the waves along ocean

beaches, and the adults can be found during summer time on these seaweed masses (Aldrich 1918)

Fucellia maritima adults emerge in large numbers in March in the British coast, and remain common until September, when their numbers decrease until November, and are not seen again until March. This species is particularly attracted to *Fucus* sp. and *Laminaria* sp. seaweed dominating wracks (Egglisshaw 1960).

Fucellia maritima is also attracted to other types of decomposing organic matter, like dead fish, crabs and excrements, being the only kind of seaweed flies species to be attracted to this type of decomposing organic matter. Although adult flies are often seen copulating on the wrack, their eggs and larvae are hard to find in beach wracks (Egglisshaw 1960).

Lyneborg (1965), referred to an observation

of a female specimen captured in Algarve region, at the Zoological Museum in Berlin, with no further information on coordinates, dates or a more accurate location. Albeit, this record was not considered in the Iberian Diptera catalogue or in Fauna Europaea (Michelsen, V., personal communication) that is, *Fucellia maritima* is not recorded in the Portuguese fauna (Carles-Tolrá 2002, Michelsen 2013). In this paper, we report for the first time the occurrence of *F. maritima* populations at Barra Beach, Aveiro, Portugal.

Material and methods

Between September 2019 and August 2020 in Barra Beach, Aveiro, Portugal (N 53 54.471 W 9 10.987), adult flies of *Fucellia* sp. were captured once every month using a sweep-net. Most flies were kept alive for rearing experiments, and some were stored in 70% alcohol solution and kept in the Department of Biology of the Aveiro University for further identification. Twenty-seven adult flies were identified using the keys provided in Lyneborg (1965) and Kirk-Spriggs et al. (2001).

Results and discussion

A total of twenty-one males, and six females were identified as *Fucellia maritima*.

Material examined: PORTUGAL: Praia da Barra, Gafanha da Nazaré, Ílhavo, Aveiro (N 40°37'54" W 8°45'01". UTM WGS 84 32N EPSG:32632): 21.III.2020, 4♀♀5♂♂; 15.VIII.2020, 2♀♀16♂♂, leg. F.S.Loureço and O.M.C.C.Ameixa, det. C.P.Castro.

Remarks. The seaweed flies observed in this location were more abundant between March and September, but specimens were present throughout the year. However, during the months of December and January there were so few individuals, that the capture with the sweeping-net was difficult. It seems that in Portugal *F. maritima* appeared more frequently throughout the year than in England, where this species is not found between December and February (Egglisshaw 1960), which is a common difference in insect

phenology between south and central/northern Europe.

Prior to this work *F. maritima* was only briefly mentioned (Lyneborg 1965) from Algarve but this single record remained unnoticed. *Fucellia tergina* (Zetterstedt, 1845) presence is however recorded for mainland Portugal, Azores and Madeira (Carles-Tolrá 2002). *Fucellia maritima* and *F. tergina* were often confused in the past, e.g. Lyneborg (1965) clarified that the *F. maritima* mentioned and described in Aldrich (1918) was actually *F. tergina* and that *F. maritima* did not occur in the New World.

Presently, the species known distribution is still mainly Palaearctic (Europe and north Africa) (Michelsen 2013) and has also been recorded from South Africa (Kirk-Spriggs et al. 2001). Here, we report that *F. maritima* populations does occur in central Portuguese Atlantic sea coast.

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