J. Entomol. Res. Soc., 24(2): 173-176, 2022 *Research Article*
Doi: 10.51963/jers.v24i2.2211 *Online ISSN:2651-3579*

Cyptophania hirsuta, a New Psocid for Europe, Found in a Zoo Hothouse in the Netherlands (Psocodea: Lepidopsocidae)

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ABSTRACT

In a zoo hothouse in the Netherlands, the psocid *Cyptophania hirsuta* Banks, 1931 was sampled in 2019 and in 2021, indicating a population. These finds are remarkable, since the species was hitherto only known from Mexico and a few islands in Oceania. The introduction pathway is undoubtedly a consignment of tropical plants from central America that was used to furnish the hothouse.

Key words: alien species, import, tropical planting, Psocoptera.

Noordijk, J. (2022). *Cyptophania hirsuta*, a new Psocid for Europe, found in a Zoo Hothouse in the Netherlands (Psocodea: Lepidopsocidae). *Journal of the Entomological Research Society*, 24(2), 173-176.
Received: December 21, 2021 *Accepted: July 06, 2022*

INTRODUCTION

The psocid fauna of Europe consists of a variety of naturally occurring, cryptogenic and alien species (Lienhard, 1998; Schneider, 2010). Several factors explain the large number of representatives in the latter two categories. Psocids are small and easily transported, especially because quite a few representatives are (semi) troglophilic, enabling them to thrive indoors and thus close to man. Psocids graze fungi and all sorts of (dry) organic substances, so they figure as pests of stored food products or may live amongst all sorts of goods and packaging material. Additionally, there are indications that these insects spread as aerial plankton over significant distances. A good deal of species have become widespread or cosmopolitan already long ago, their origins remaining largely unknown. This gap in our knowledge is enforced because of a general lack of faunistic and taxonomic studies on this insect group in most parts of the world.

In this article, *Cyptophania hirsuta* Banks, 1931 is reported as a new species for the fauna of the Netherlands and Europe. It is certainly an alien species here, since it was found in a zoo hothouse and the members of the genus live only in the tropics and subtropics and have never been seen in Europe before (Mockford & Wynne, 2013). The discovery is rather surprising, for *C. hirsuta* seems rare and was previously only known from Mexico and Oceania (Hawaii and Moorea in Polynesia and Fiji in Melanesia) (Banks, 1931; García Aldrete, 1985; Thornton, 1989; Johnson, Smith, Hopkins & Eades, 2021).

RESULTS

Cyptophania hirsuta Banks, 1931

Material examined: the Netherland, province of Drenthe, Emmen, Wildlands Adventure Zoo, tropical hothouse Jungola, 02.07.2019, 1 ♀ (Fig. 1), leg. J. Noordijk, col. Naturalis Biodiversity Center, Leiden (nr. RMNH.INS.1453293); ibidem, 11.02.2021, 1 ♀ (Fig. 2), leg. Bas Nijhof (after the photo was taken, the specimen was stored dry, withered and not stored in a collection).

The first specimen of *C. hirsuta* in Europe was collected in 2019 by the author while conducting an insect inventory of a zoo hothouse in Emmen, the Netherlands. The specimen was mounted and photographed (Fig. 1). Identification with European literature failed. Only after a second specimen was collected in 2021 by an entomologist working on biological control in the same hothouse and photographed (Fig. 2), the search for the identity continued. Because the majority of the planting in the hothouse was brought in from a nursery in Costa Rica (see below), the photos were send to two psocid specialists in the New World. Both dr. A.N. García Aldrete (Instituto de Biología, Universidad Nacional Autónoma de México, Mexico City, Mexico) and prof. dr. E.L. Mockford (School of Biological Science, Illinois State University, Illinois, USA) replied that *C. hirsuta* was the most likely candidate, and that several articles (Banks, 1931; Karny, 1932; Mockford & Wynne, 2013) should be consulted. With the aid of these sources, the identification became definite. *Cyptophania hirsuta* can be separated from its six congeners by its distinct venation in its forewing, whereby vein Sc arises from the wing base.

Banks (1931) provides a schematic drawing of the wing venation and habitus and Mockford & Wynne (2013) give an augmented description, including many detailed

drawings of body parts. In the present article, the first photographs of *C. hirsuta* are published (Figs. 1-2), which should make future identifications easier. The species has a highly characteristic appearance, with golden and dark patches of hairs over the complete body and elytriform wings encompassing the abdomen. Only females exist, since *C. hirsuta* is parthenogenetic (Mockford & Wynne, 2013).

Fig. 1. Female of *Cyptophania hirsuta*. The Netherlands, Emmen (province of Drenthe), Wildlands Adventure Zoo, tropical hothouse Jungola, collected on 2.07.2019. Photo: Theodoor Heijerman.

Fig. 2. Female of *Cyptophania hirsuta*. The Netherlands, Emmen (province of Drenthe), Wildlands Adventure Zoo, tropical hothouse Jungola, collected on 11.02.2021. Photo: Jan van Duinen.

DISCUSSION

Cyptophania hirsuta is neither known as a cosmopolitan nor a tramp species. In fact, its preceding documentation in only one country and three islands, would suggest it being rare. On the other hand, its presence on several remote islands indicates the species is easily introduced to new areas and it is very plausible that, due to the underrecording of Psocodea, its distribution area is larger than we know.

Very little is known on the biology of *C. hirsuta*, its biotopes are described as “on sugar cane”, “birds’ nest and dead leaves” and “foliage in woodland” (in Hawaii, Banks,

1931; Thornton, 1989; Mockford & Wynne, 2013) and “inner crater wall” (in Moorea, Thornton, 1989). The specimens from the Netherlands were gathered unconsciously during inventories, and no specific biotope in the zoo hothouse is known. Seen the current tropical distribution of the species, there seems very little chance of it establishing outdoors or even outside glasshouses in Europe.

There is a presumption on the origin of the population of *C. hirsuta* in the zoo hothouse. The zoo in Emmen was moved to a new location in the period 2013-2016. In the new hothouse, tropical plants from the former hothouses were planted, but circa 14.000 new tropical plants were imported from a large nursery in Costa Rica (Noordijk, van Veen, Groothuis & Schimmel 2019). Although Costa Rica is not bordering Mexico, where *C. hirsuta* is recorded, the option that this psocid was introduced with this consignment of plants seems likely. It also means that it is likely that *C. hirsuta* occurs in Costa Rica and maybe even in the other countries in Central America. Due to regular exchange of plants between zoos and other tropical hothouses, there is certainly a chance that *C. hirsuta* will also be found at other locations in Europe.

ACKNOWLEDGEMENTS

I am very thankful to Theodoor Heijerman and Jan van Duinen for making the beautiful and clear photos, Jan Schimmel for allowing the insect inventory in the zoo hothouse, Bas Nijhof (†) for collecting the second specimen and Alfonso N. García Aldrete and Edward L. Mockford for making the identification.

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