# New records of the rare fungus gnat *Keroplatus tipuloides* Bosc, 1792 from southern Luxembourg (Diptera, Nematocera, Sciaroidea: Keroplatidae)

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**Abstract.** The rare fungus gnat *Keroplatus tipuloides* Bosc, 1792 is reported for the second time from Luxembourg. It has been found at two sites near Dudelange: one with larvae and one where an adult female was observed.

## Introduction

*Keroplatus tipuloides* was first recorded from Luxembourg by Cardew & Carrières (2001) in the old-growth woodlands of the "Schnellert" near Berdorf. In their paper, these authors present a good summary of the gnat's distribution and biology. Fungus gnats have never been studied in Luxembourg, or at least, we are not aware of any published data, and most of the species are small and only identifiable by seasoned experts of the group. *Keroplatus tipuloides* is an exception, insofar as this is a quite large and colourful, hence conspicuous insect, unlikely to be confused with any other European representative of its genus (of which there are three more according to Fungus Gnats Online 2022, GBIF 2022, and Matile 1990).

The present author observed this impressive insect while studying beetles associated with dead and decaying wood in the vicinity of Dudelange, and these observations are detailed in the present paper.

## Methods

When encountered in the field, adults and larvae were photographed and identified by comparing them with pictures available on the internet (iNat 2021, GBIF 2021).

## Results

The species was found at the following two sites:

Dudelange "Echerdall" or "Echerdallerklapp", 49°28'12.2"N 6°05'44.7"E, altitude 363 m a.s.l., 11th June 2021, beech woodland on limestone, dead beech *Fagus sylvatica* with carpophores of the bracket fungus *Fomes fomentarius* presenting the characteristic mucilaginous nets with larvae still present (fig. 1).



Fig. 1. Mucilaginous net with *Keroplatus* larva, Dudelange "Echerdall". Photo R. Gerend, 11.06.2021.



Fig. 2. Female of *Keroplatus tipuloides*, Dudelange "Wal". Photo R. Gerend, 27.06.2021.



Fig. 3. Female of *Keroplatus tipuloides*, Dudelange "Wal". Photo R. Gerend, 27.06.2021.



Fig. 4. Large dead beech with *Fomes* carpophores, Dudelange "Wal". Photo R. Gerend, 27.06.2021.

Dudelange "Wal" or "Wald", 49°29'20.9"N 6°07'35.4"E, altitude 305 m a.s.l., 27th June 2021, oak-hornbeam woodland, large dead beech with *Fomes fomentarius* carpophores (fig. 4), 1 female found at the foot of the tree (figs 2 and 3).

Both locations are in the extreme south of the country and close to the French border. Both were chance encounters as the species has not been actively sought after.

## Discussion

The fungus gnat *Keroplatus tipuloides* is a Palaearctic species known from most parts of continental Europe (Ståhls & Kaila 1990). Jentzsch et al. (2016) summarize what was known about the species' European distribution by that time and provide the first German records of what is generally thought to be a rare and, possibly, declining species due to the strict affiliation with the carpophores of the bracket fungus *Fomes fomentarius,* growing on mature deciduous trees, beech being the most common host in our area (Cardew & Carrières 2001, Speight 1989). The species has also been recorded in Lorraine (northeastern France) near Liverdun (Carrières 2001).

The larvae live in mucilaginous webs under the carpophores (fig. 5) and feed on the fungal spores collected by these (Santini 1982). This dependence on a host species associated with mature woodland is a probable cause to explain this fungus gnat's overall rarity, as woodlands with a sufficient number of mature and decaying/dead trees are threatened by intensive forest management in most parts of the continent (Speight 1989, Ulyshen 2018). On the other hand, the species has recently been found quite regularly in Belgium, 11 different sightings in 2020 and 2021 alone,



Fig. 5. *Fomes fomentarius* carpophores with mucilaginous nets, Dudelange "Echerdall". Photo R. Gerend, 11.06.2021.

by citizen scientists reporting their observations online (Waarnemingen 2022), which makes room for hope, that in areas where woodland reserves with a non-intervention policy are established and/or conventional forests are managed in a way that favours wildlife in general and saproxylic organisms in particular, *Keroplatus tipuloides* populations might be able to expand and ensure the species' survival. The present author believes that this striking species will be found in more places in Luxembourg as the country's woodlands, especially those managed by the public forestry department, are generally quite old and much richer in deadwood now than at any other time in recent history, and carpophores of *Fomes* have become a regular feature of them. Additionally, a large number of hectares have been set aside to serve as biological reserves in which no further management will take place (Murat 2008).

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