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# Observations of *Trachyzelotes pedestris* (C.L. Koch, 1837) hunting for terrestrial isopods in Belgium

## Introduction

Terrestrial isopods are known to be tough prey items for terrestrial invertebrate predators. They have developed a large variety of antipredatory strategies (TUF & DURAJKOVA 2022), but mainly their strong exoskeleton makes them into a challenging prey item (PEKÁR & TOFT 2015). Despite their high abundance in many terrestrial ecosystems, terrestrial isopods cover only a limited share of the diet of generalist arthropod predators, such as many spiders (Araneae) (see e.g. SALOMON 2011) and are not a preferred prey item (García et al. 2016). Only few spider species can be considered terrestrial isopod specialists, with the genus *Dysdera* as the most important one. Besides this genus, terrestrial isopods are consumed by different genera such as *Pholcus*, *Tegenaria* (PEKÁR AND TOFT 2015) and several -mostly synantropic- Theridiidae such as some *Steatoda* species, but their diet is always complemented by other prey items. Consumption of terrestrial isopods (oniscophagy) is uncommon in spiders and although it can be a minor part of some species diets, observations of oniscophagy are rare. The article at hand reports on two cases of oniscophagy by *Trachyzelotes pedestris* (C.L. Koch, 1837), and to the best of our knowledge, this is the first report of oniscophagy within the Gnaphosidae family. Remarkably, some Gnaphosidae (like e.g. *Drassodes* spp.) clearly share habitats and refugia with terrestrial isopods and very likely possess the strength (even more than *T. pedestris*) to overpower them.

## Observations

The first observation was done by the second author on the 24<sup>th</sup> of March 2020 at around 17h in Bousval (Brabant-Wallon, Belgium). A sub-adult male of *T. pedestris* was filmed (iPhone 6) trying to catch a terrestrial isopod of the species *Porcellio scaber* Latreille, 1804 on a pile of bricks alongside a garden shed (Fig. 1) (see [Online appendix A](#) for the original movie of the observation). When observed, the terrestrial isopod lacked the second pair of antennae and the spider tried to reach the ventral part of the isopod body while clinging to its back. Furthermore, the first pereopod (isopod leg) at the right side seems not to function anymore (see Online appendix A at around 1 min. and 25 sec.). The spider seems to use silk as well in attacking the isopod. It is not known if the spider finally succeeded in catching the much larger terrestrial isopod.

The second observation (leg. Christine Devillers) took place on the 3<sup>th</sup> of July 2021 at around 16h in Spa (Liège, Belgium). An adult female of *T. pedestris* carrying an adult male isopod of the species *Porcellio scaber* was photographed in a garden (Fig. 2). The terrestrial isopod seemed to be paralysed or dead. The terrestrial isopod was carried below the spider which had its fangs onto the head of the isopod.

## Discussion

It is remarkable that both observations were done during daylight since most terrestrial isopods remain in dark and moist hiding places during daytime. In both observations, the terrestrial isopod species was *Porcellio scaber*. This species is very common in Belgium (DE SMEDT et al. 2020) both in gardens and natural habitat (BOERAËVE et al. 2021). It is also a species that is relatively well adapted to dry conditions and has a high desiccation resistance (DIAS et al. 2013). It is one of the few species that can be found under less sheltered conditions during daytime. It could be the case that *T. pedestris* hunted on *P. scaber* under sheltered conditions and that the isopod tried to escape by moving out of its shelter followed by the spider. *Trachyzelotes pedestris* has no particular long fangs that would enable the species to easily catch terrestrial isopods like seen in the genus *Dysdera* (REZAC et al. 2008). We can assume that the species needs a different tactic than simply catching the isopod with a single bite with the fangs. In the first observation, the isopod has lost its second (large) antennae. This commonly happens when attacked by a predator since these large antennae are easy to grab for a predator (SCHMALFUSS 1998). Therefore, we could assume that the struggle between both species already started some time before filming. Losing the second pair of antennae limits the isopod in receiving information from its environment. In addition, the second pair of antennae helps

the animal to turn from a dorsal to a ventral position when overturned (SCHMALFUSS 1998). Losing these antennae would make it easier for the spider to reach the vulnerable ventral side of the terrestrial isopod and catch it. On the other hand, the second observation shows that the terrestrial isopod has at least one of its second antennae while already captured. However, it is important to notice that in the first observation the spider is much smaller compared to the isopod while in the second observation they have roughly the same size. The malfunctioning of the isopods first pereopod on the right might be, analogue to the antennae, an indication of the spider attack. Interestingly, we see that *T. pedestris* makes use of silk (in the first observation) that it wraps around the isopod. Gnaphosids are known to use attachment silk (piriform silk), that is very stretchy and tough, to immobilize dangerous prey such as ants or other spiders (WOLFF et al. 2017). Here it might be used to immobilise the terrestrial isopod especially since it is much bigger being important for *T. pedestris* in trapping much larger prey. We encourage observational research to reveal the potential hunting strategy of *T. pedestris* and other Gnaphosidae on terrestrial isopods.



**Figure 1:** Screenshot of the video where a sub-adult male *Trachyzelotes pedestris* attacks the terrestrial isopod *Porcellio scaber* on the 24<sup>th</sup> of March 2020 in Bousval (Brabant-Wallon, Belgium). © Arnaud Henrard



**Figure 2:** An adult female *T. pedestris* dragging a male *Porcellio scaber* on the 3<sup>th</sup> of July 2021 in Spa (Liege, Belgium). © Christine Devillers

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Online appendix A can be consulted here: <https://belgianspiders.be/j-belg-arachnol-soc-2022-2/>

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### Abstract

We report two sightings of *Trachyzelotes pedestris* catching or attempting to catch a terrestrial isopod of the species *Porcellio scaber*. Observations of oniscophagy are rare in most spider species and to our knowledge these are the first sightings of a Gnaphosidae spider preying on terrestrial isopods. We propose a potential hunting strategy of this spider to catch terrestrial isopods.

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