

Short note

New Distribution Records of an Endemic Terrestrial Isopod Species (Trachelipus trilobatus) in the Romanian Southern Carpathians

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Abstract. *Trachelipus trilobatus* is an endemic terrestrial isopod species, present only in the Herculane Spa area situated in the Cerna River valley, southwestern Romania. Here we present two new records of this endemic species, which increases its known distribution. Both locations are situated in the Domogled-Valea Cernei National Park. One distribution record is situated at approximately 10 km upstream from its closest previously known location, extending the species' distribution area with approximately a third. Both distribution points present the typical habitats of the species, represented by steep and moist limestone slopes, with caves, and gorge-like areas covered by beech forests.

Key words: Cerna valley, distribution, range extension, endemic species, habitats.

The number of terrestrial isopod species in Romania is higher than in the neighboring countries (Sfenthourakis & Hornung, 2018). A high amount of these species are endemic (Sfenthourakis & Hornung, 2018), many of them being recorded in caves (Tabacaru & Giurginca, 2013). A region in Romania with numerous endemic terrestrial isopods at different geographic levels is the Herculane Spa area from southwestern Romania (e.g. Pop et al., 2019). The terrestrial isopod fauna has a particular relation with the small town of Herculane Spa, especially with its older part (Pop et al., 2019), which has a two-millennium history (e.g. Spânu, 2012; Boda et al., 2017). Among the isopods recorded in the Herculane Spa, *Trachelipus trilobatus* has the smallest distribution range (Pop et al., 2019). Furthermore, within the species of this

genus, *T. trilobatus* has one of the smallest distribution ranges in the country (Tomescu et al., 2015), as it is present only in Romania (Schmalfuss, 2003). Records of this species are known only from the Herculane Spa area and its neighboring region (e.g. Tomescu et al., 2015). Although *T. trilobatus* is considered to have a similar appearance with some isopod species from the Mediterranean region (Radu, 1958), its exclusive link to natural areas has recently reconfirmed its status as a native species (Pop et al., 2019). Until now, this species was recorded only in nine locations, all from Herculane Spa and its neighboring region (see in Tomescu et al., 2015; Pop et al., 2019), including some caves (e.g. Tabacaru & Giurginca, 2013). Only one of these nine records is situated outside the Cerna River

valley, on the other slope of the Mehediinți Mountains, but it is considered an uncertain record by the authors (Ilie et al., 2002). Because of its small distribution range and its peculiar zoogeographic significance, any new distribution record of *T. trilobatus* is of high importance, as for other endemic isopod species (e.g. Ferenti et al., 2016; Ferenti & Covaciu-Marcov, 2017; Recuero & Rodríguez-Flores, 2019). The present note reports two new distribution records of *T. trilobatus*.

The two new distribution points were recorded in July 2020. Our initial objectives were not the terrestrial isopods of the area, but as we sighted suitable habitats for *T. trilobatus*, we started to search for the species on wet limestone walls, cracks or under stones. Because of the unique features of this species, the specimens were identified in situ, none of them was collected. Both new distribution records are situated in the Cerna River valley upstream the Herculane Spa. One location is situated near the Vânturătoarea Waterfall. The other one is

located further upstream in the Cerna River valley, with some hundreds of meters upstream from the intersection between the road to Baia de Aramă and the one to Cerna village (Fig. 1). Although both new distribution records are situated in the Cerna River valley, the second one is situated at approximately 10 km upstream from the closest previously known distribution record, the Prisăcina Gorge (Tomescu et al., 2015). This new record extends the distribution area of *T. trilobatus* in the Cerna River valley by almost a third. Even if 10 km do not seem too much, in proportion to this species distribution range it represents an important extension. Moreover, the areas between the new and the old distribution records contain numerous habitats potentially used by this species (Tomescu et al., 2015). Thus, although rare and strictly geographically located, *T. trilobatus* is probably continuously distributed in the Cerna Valley, at least between its lower limit (Pecinisca Gorge) and the new distribution record.

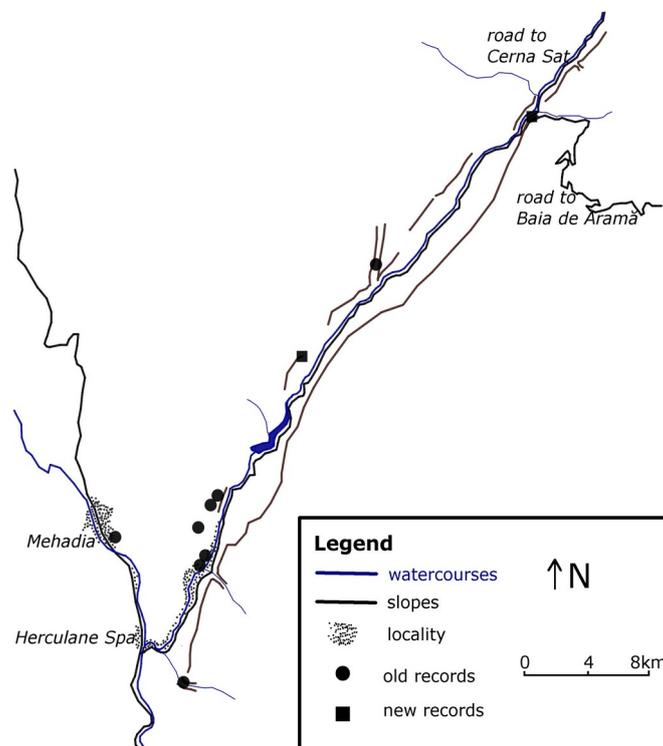


Fig. 1. The old (after Tomescu et al., 2015 and Pop et al., 2019) and new records of *Trachelipus trilobatus* in the Cerna River valley.

Nevertheless, despite the new distribution records and range extension, *T. trilobatus* remains strictly related to restrictive ecological conditions. The new habitats are similar to the previous ones described in the literature (Tomescu et al., 2015). In both cases, *T. trilobatus* was identified on steep (almost vertical) limestone walls, with water infiltrations, present in areas covered with beech forests (Fig. 2a, b). These limestone walls contain numerous cavities and small caves, as *T.*

trilobatus have populations both outside and inside the caves (Tomescu et al., 2015), as it is a troglophilous species (Tabacaru & Giurginca, 2013). *T. trilobatus* individuals (Fig. 2c) were identified either under rocks or directly on limestone walls. In the upstream location on a single square meter of limestone wall in a couple of minutes we observed two individuals under two rocks, two individuals directly on the wall, two shed skins, and fragments from one dead individual.



Fig. 2. The habitat (a) and microhabitat (b) of *Trachelipus trilobatus* (c) in the upstream new distribution point.

The extension of the distribution range of other endemic terrestrial isopod species was also reported in other recent studies (Recuero & Rodríguez-Flores, 2019; Hughes, 2020), including Romania in the case of another endemic *Trachelipus* species (Ferenți & Covaciu-Marcov, 2017). Certainly, new studies on the Cerna River valley will lead to

further extension of this species distribution range, but only in its restrictive habitats. Our data confirms the fact that this stenobiont species have probably been evolving for a long time in the peculiar conditions of this region (Tomescu et al., 2015). Its survival seems to be ensured by the fact that the species uses restrictive and hard-to-reach

habitats, in a region where even old-growth forests are affected by wood harvesting (Vijulie et al., 2017). Even if law (O.U.G. 57/2007) does not protect *T. trilobatus*, the fact that it is an endemic and relict species makes it worthy for Domogled-Valea Cernei National Park, since this protected area seems to shelter all its known populations. The importance of species that are not protected but have zoogeographic value for protected areas was already mentioned in Romania, for example in the case of an endemic species with a larger distribution range, namely the Carpathian scorpion (Covaciu-Marcov & Ferenți, 2019). Thus, we consider that *T. trilobatus* should be protected in the future and deserves to be included at least in a national red list.

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