

Note on the distribution of *Geolycosa vultuosa* (Araneae: Lycosidae) in the "Câmpia Careiului" Natura 2000 site, north-western Romania

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Abstract. We identified *Geolycosa vultuosa* in 11 grassland patches, most of them located in the centre of the protected natural area. These habitats are sandy grasslands with a moderate or high grazing intensity as well as fallow or abandoned lands and a sand pit. The expansion of the species in the area is favoured by the continuously increasing number of sheep flocks which produce suitable habitats for *G. vultuosa* through grazing.

Key words: *Geolycosa vultuosa*, sandy grassland, grazing, sand pit, Romania.

Geolycosa vultuosa (C. L. Koch, 1838) is a large wolf spider species with a distribution area that ranges from the south-eastern part of Europe to Central Asia (Platnick 2014). It can be found in open, dry habitats with sparse herbaceous vegetation (Szinetár 2006) where it digs burrows of variable depth according to the consistency of the ground, usually between 16 and 25 cm (Fuhn & Niculescu-Burlacu 1971, Mustafaev & Kovblyuk 2012). It is protected in Hungary (Szinetár 2006) and considered endangered in Slovakia (Gajdos & Svaton 1993). In Romania *G. vultuosa* has been reported in several localities of south, south-eastern and south-western part of the country (Fuhn & Niculescu-Burlacu 1971, Duma 2006), and sporadic records are also available for central, eastern and north-western Romania (Fuhn & Niculescu-Burlacu 1971). However many of these reports are more than 40 years old and may not reflect the current situation because the overall lack of comprehensive distribution studies and due to the habitat modifications over time induced by changes in land management. Land-use types as well as the various management measures and their intensity are known to shape spider communities differentially (Bell et al. 2001, Urák et al. 2010). With this contribution we present new records of *G. vultuosa* in north-western Romania and how its occurrence relates to the land management of this area.

Field work took place during spring-autumn of 2013 and spring of 2014 as part of a larger study concerning wolf spiders of the Câmpia Careiului Natura 2000 site (ROSCI0020) (centre: 47°37'10.75"N 22°13'2.07"E, total area: 23.597 ha). The main feature of this protected area is given by the tessellated arrangement of its dry (sand dunes, sandy grasslands) and moist (marshes, wet meadows) habitats (Covaciu-Marcov et al. 2009) which assures the existence of a diverse fauna with many rare species (e.g. Covaciu-Marcov et al. 2009, Ferentj et al. 2012, Sas-Kovács et al. 2013, Hoffmann & Hoffmann-Berei 2014). To assess the presence of the species we made several transects in search for burrows. During 2013 burrows were dug up carefully without hurting their residents but in 2014 spiders were already observed directly in the burrow with the help of the camera of a Voltcraft BS-50X endoscope. Spiders were identified in the field using the features presented in Fuhn & Niculescu-Burlacu (1971) and Szinetár (2006).

We found 11 grassland patches inhabited by *G. vultuosa* in the surveyed area, the majority located within a radius of 3-4 km (Fig. 1-A.). Despite the low dispersal rates observed in

different *Geolycosa* species (e.g. McCrone 1963, Marshall 1995) these populations may not be entirely isolated because, even though we failed to found data on the precise distance travelled by *Geolycosa* males, it was implied that they wander certain distances in search for mates (Miller & Miller 1986, Marshall 1995). In addition, dispersal of youngsters by ballooning is also possible in some *Geolycosa* species (Miller 1984), all these also having importance in avoiding or reducing inbreeding of the populations (Marshall 1995, Pusey & Wolf 1996).

A total number of 17 wolf spider species were identified in the *G. vultuosa* habitats from the studied area. Many of them i.e. *Alopecosa accentuata* (Latreille, 1817), *A. cursor* (Hahn, 1831), *A. mariae* (Dahl, 1908), *A. schmidtii* (Hahn, 1835), *Xerolycosa miniata* (C. L. Koch, 1834) are, as it was expectable, xerophilous species (Buchar & Růžicka 2002). The presence of some hygrophilous species e.g. *Arctosa leopardus* (Sundewall, 1833), *Pardosa pratavaga* (L. Koch, 1870) (Buchar & Růžicka 2002), is due to the existence of moist depression integrated in the xerothermic grasslands. The southernmost located patch is represented by an extensive, partially abandoned sand pit (Fig. 1-B.) that has an interesting wolf spider fauna, with rare species i.e. *Arctosa perita* (Latreille, 1799), *Lycosa singoriensis* (Laxmann, 1770), *Pardosa nebulosa* (Thorell, 1872) beside others. Sand pits are increasingly recognized for their importance in preserving species related to open sand in various organisms, e.g. beetles (Lönnberg & Jonsell 2012), bees and wasps (Heneberg et al. 2013).

Although the species was previously reported to occur in the north-eastern part of the study area (Fuhn & Niculescu-Burlacu 1971) we failed to retrieve this record presumably due to changes in vegetation cover. Alteration of species composition e.g. due to land abandonment or degradation, intensive grazing, lack of proper management are well-known facts in sandy grasslands (e.g. Matus et al. 2003, Buchholz 2010, Szinetár & Samu 2012). While most of the grasslands from the area are subjected to moderate or heavy sheep grazing, others are left completely unmanaged which favours development of denser and taller vegetation (Matus et al. 2003) with negative effects on the spider species associated with patches of bare sand or scarce vegetation. According to Szinetár et al. (2012) though *G. vultuosa* may occur both in natural and disturbed habitats it can form large populations especially in heavily grazed or trampled grass-

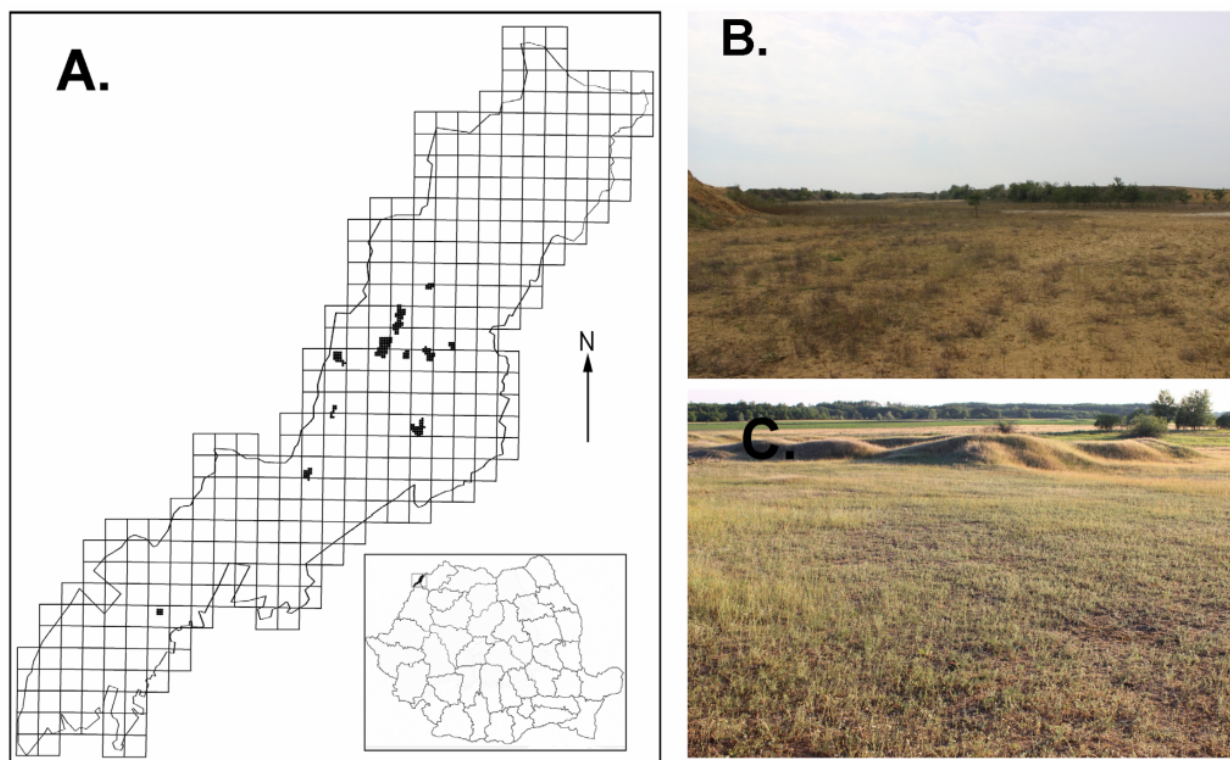


Figure 1. A. - Distribution of *Geolycosa vultuosa* in Câmpia Careiului Natura 2000 site (1x1 km UTM grid, dots represent 100x100 m); B. - View of the partially abandoned sand pit; C. - View of a grazed sandy grassland.

lands. Our results are consistent with the above mentioned since the highest density of burrows of *G. vultuosa* (data not shown) was observed in an intensively grazed sandy grassland (Fig. 1-C.). Furthermore, the species can easily settle down in fallow or abandoned lands which appear frequently in the area probably due to inherent lower productivity of sandy soils (Al-Omran et al. 2005).

At present *G. vultuosa* is not endangered in the protected area but continuous monitoring of its populations is needed due to frequent land-use changes i.e. land abandonment alternating with conversion of grasslands to agricultural fields. In addition, we anticipate an expansion of the species in the area due to fairly intensive grazing of many grasslands which creates suitable habitats for *G. vultuosa* but may lead to disappearance of rare or specialist species that prefer less disturbed habitats (Szinetár & Samu 2012).

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