

Rickia wasmannii (Laboulbeniales) influences the water consumption of *Myrmica scabrinodis*



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Introduction

Ant colonies are highly rewarding targets for parasites. Several fungi exploit ants, most of them are from the tropics, but some fungi are known from Europe. *Rickia wasmannii* (Ascomycetes: Laboulbeniales) is an ectoparasitic fungus living on different species of the ant genus *Myrmica* in Europe. In the Carpathian Basin (Central Europe), the most frequent host species is *Myrmica scabrinodis* (Fig.1).



Fig.2. Photo: C. Mihali

The fungal thalli penetrate the outer layer of the cuticle, and appear on the surface of the hosts as clubbed setae-like structures under microscope (Fig. 2).



Fig.1. Photo: C. Mihali

Material and methods

In our research water consumption of infected (240) and uninfected (240) *M. scabrinodis* workers were tested under laboratory conditions. The time one individual spent with water consumption after 12 hours thirsting was measured in 24 ant nests, collected from two regions.

Results

We found significant difference between population Aggtelek and Rakaca, the infected individuals consume more water, than uninfected (Fig. 3. GLMM: $z = 2.72$, $p = 0.006$, $n = 240$). The same results we found between population Újléta and Monostorpályi (Fig.4. GLMM: $z = 3.91$, $p = 0.001$, $n = 240$).

Discussion

The analysis showed that infected ants spent significantly more time with consuming water than the uninfected ones. These behavioural changes support the possibility that the fungus absorbs water from the tissue, or it can cause increased evaporation through penetration of the cuticle with the haustoria. It seems to be clear, that the ants have to replace the loss of water.

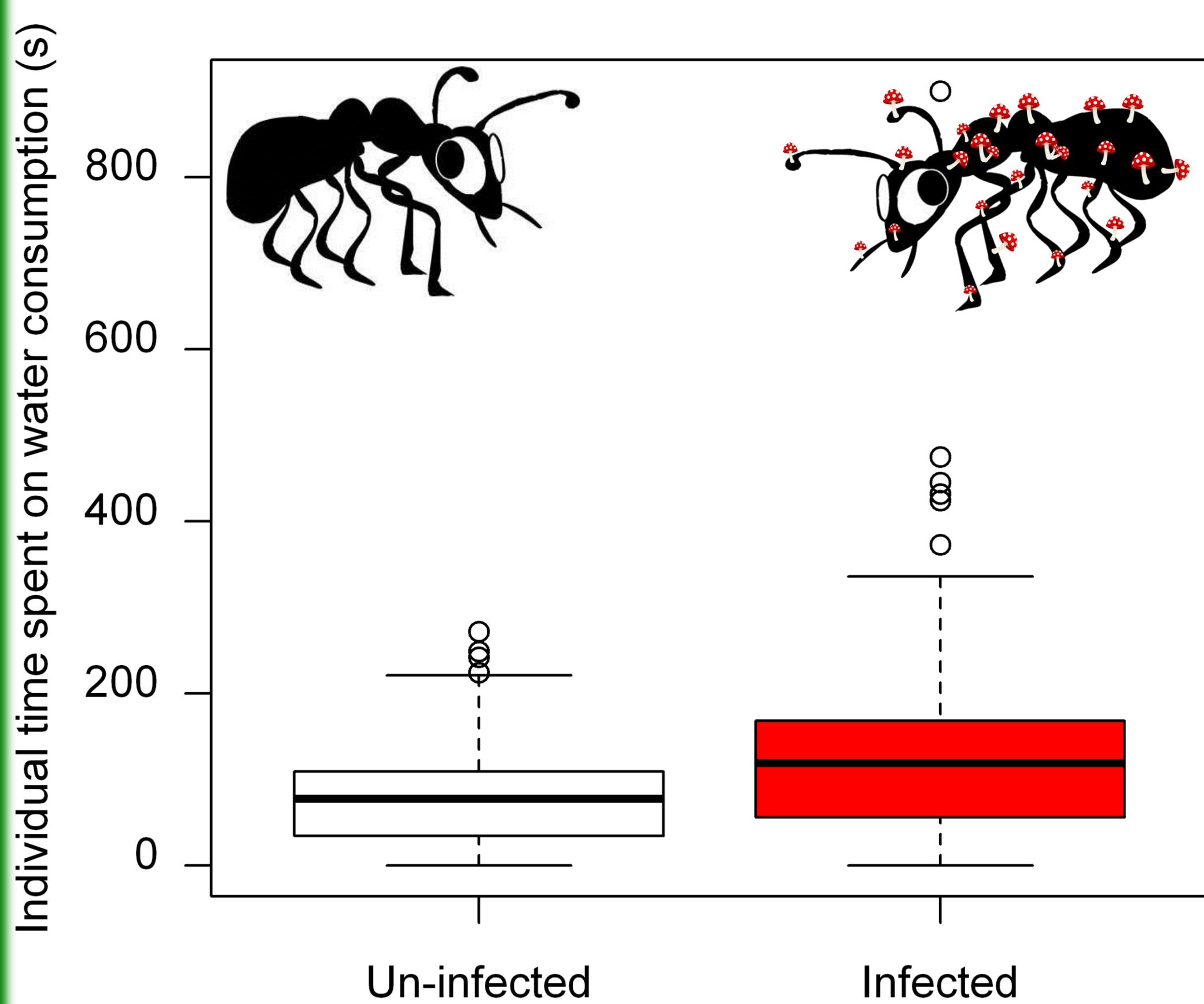


Fig.3. Individual time spent on water consumption in infected (Rakaca) and uninfected (Aggtelek) populations

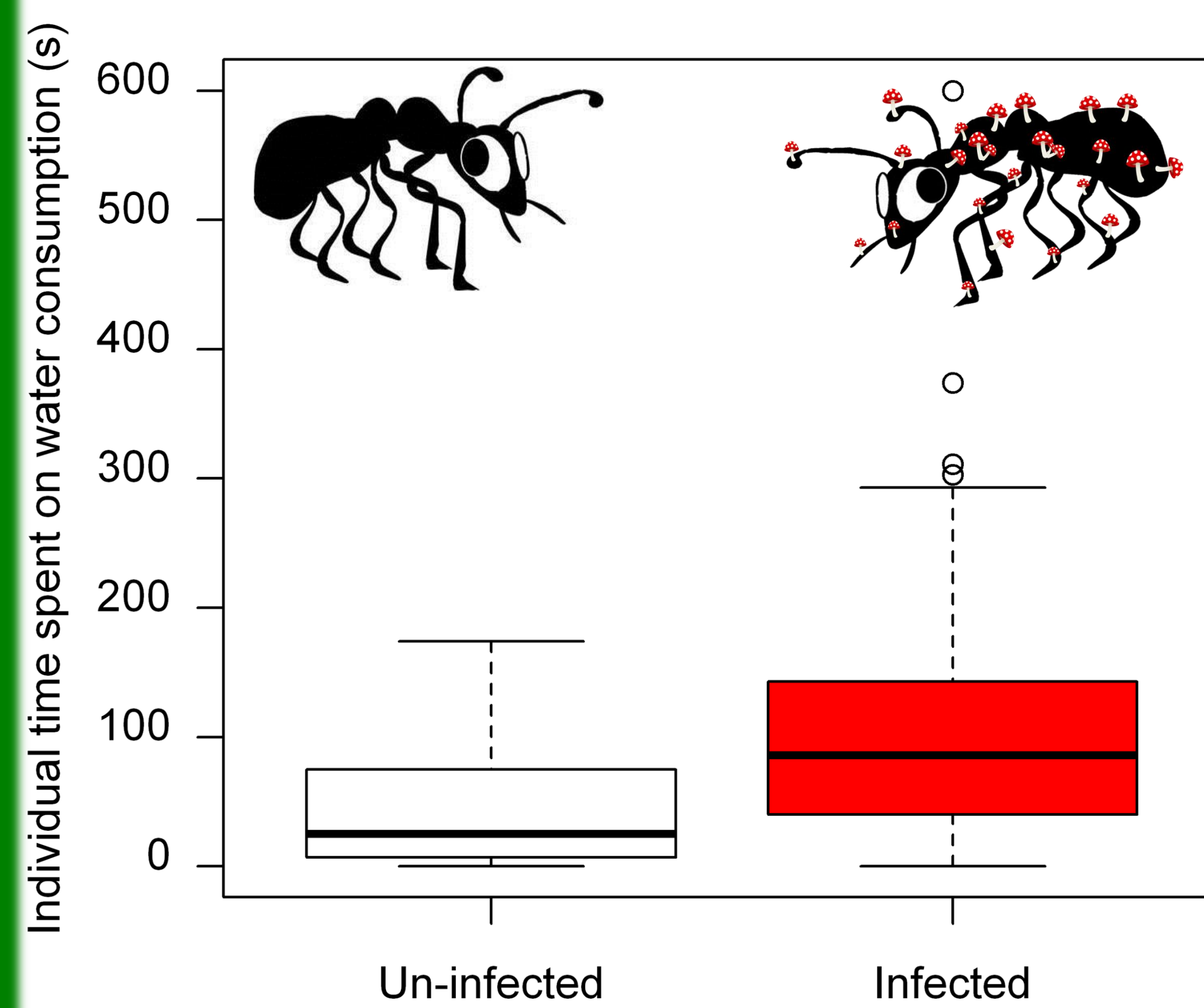


Fig.4. Individual time spent on water consumption in infected (Újléta) and uninfected (Monostorpályi) populations

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References

- Csata, E., Czekes, Zs., Erős, K., Németh, E., Hughes, M., Csósz, S., Markó, B., (2013): Comprehensive survey of Romanian myrmecoparasitic fungi: new species, biology and distribution. *North-Western Journal of Zoology* 9(1): 23–29.
- Tartally, A., Szócs, B., Ebsen, J. R. (2007): The first records of *Rickia wasmannii* Cavara, 1899, a myrmecophilous fungus, and its *Myrmica* Latreille, 1804 host ants in Hungary and Romania (Ascomycetes: Laboulbeniales; Hymenoptera: Formicidae). *Myrmecological News*, 10, 123.

