

Accepted Manuscript

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PII: S0376-6357(17)30556-9
DOI: <https://doi.org/10.1016/j.beproc.2018.02.004>
Reference: BEPROC 3599

To appear in: *Behavioural Processes*

Received date: 23-11-2017
Revised date: 2-2-2018
Accepted date: 5-2-2018

Please cite this article as: Rosa ME, Barta Z, Kosztolányi A, Willingness to initiate a fight but not contest behaviour depends on intruder size in *Lethrus apterus* (Geotrupidae), *Behavioural Processes* (2018), <https://doi.org/10.1016/j.beproc.2018.02.004>

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Willingness to initiate a fight but not contest behaviour depends on intruder size in *Lethrus apterus* (Geotrupidae)

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Highlights

- Residents won more contests than intruders in *Lethrus apterus*
- Intruders behaved more aggressively during contests
- Small intruders were less willing to engage in a fight than large ones
- Large intruders spent more time inside the burrow especially late in the breeding season
- Intruder size did not affect the duration and the escalation of the contest

Abstract

In resident-intruder contests, residents are expected to win more often than intruders unless the intruder has significantly higher competitive ability that is often determined by its size. Therefore, small intruders are expected to be less motivated to engage in contests than large ones and intruder size is predicted to have a positive relationship with the duration and escalation of the encounters. In a field experiment we tested these hypotheses in *Lethrus apterus*, a biparental beetle breeding in underground tunnels, by placing either a small or a large male in front of a tunnel occupied by a resident male. In agreement with our predictions residents won most of the encounters. Small

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