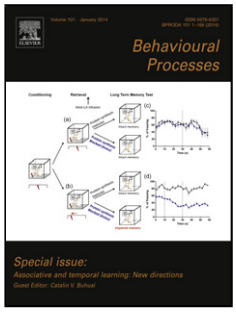
Accepted Manuscript



Title: Attracted by a magnet: Exploration behaviour of rodents in the presence of magnetic objects

Authors: Sandra Malewski, E. Pascal Malkemper, František Sedláček, Radim Šumbera, Kai R. Caspa, Hynek Burda, Sabine Begall

PII: S0376-6357(17)30605-8
DOI: https://doi.org/10.1016/j.beproc.2018.02.023
Reference: BEPROC 3618

To appear in: *Behavioural Processes*

Received date: 7-12-2017
Revised date: 9-2-2018
Accepted date: 28-2-2018

Please cite this article as: Malewski S, Malkemper EP, Sedláček F, Šumbera R, Caspa KR, Burda H, Begall S, Attracted by a magnet: Exploration behaviour of rodents in the presence of magnetic objects, *Behavioural Processes* (2010), https://doi.org/10.1016/j.beproc.2018.02.023

Attracted by a magnet: Exploration behaviour of rodents in the presence of magnetic objects

Sandra Malewski[1], E. Pascal Malkemper[1, 2], František Sedláček[3], Radim Šumbera[3], Kai R. Caspar[1], Hynek Burda[1, 2], Sabine Begall[1]

[1]*Department of General Zoology, Faculty of Biology, University of Duisburg-Essen, 45117 Essen, Germany*

[2]*Department of Game Management and Wildlife Biology, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Kamýcká 129, 165 21 Prague 6, Czech Republic*

[3]*Department of Zoology, Faculty of Science, University of South Bohemia, Branišovská 1760, 370 05 České Budějovice, Czech Republic*

Corresponding author: sandra.malewski@uni-due.de

HIGHLIGHTS

- Innovative, fast and low-cost methodological approach, investigating an animal's exploration behaviour in the presence of magnetic objects, is presented. Particularly, the animal's ability to respond to magnetic stimuli is tested. We found consistent results for three rodent species, exploring a magnet significantly longer than a sham control. Biological meaning of the animal's longer stay at the magnet compared to the sham is discussed.
- The assay can be applied to create a reliable basis to apply more complex magnetobiological experiments.
- Furthermore, the assay offers the great potential to be used by other researchers, studying sensory ecology in general and magnetoreception in particular, as well.
- In our study, the assay was applied on rodents, but is suitable for diverse other taxa.
- It could be shown for the first time that naked mole-rats respond to magnetic stimuli, indicating the possible posession of a magnetic sense.