Poster Session 1 - Rodent Behaviour

17 Secondhand horror: effects of direct and indirect predator cues on behavior and reproduction of the bank vole

Thorbjörn Sievert¹, Marko Haapakoski¹, Rupert Palme², Hannu Ylönen¹

¹Department of Biological and Environmental Science, Konnevesi Research Station, University of Jyväskylä, Jyväskylä, Finland, thorbjorn.t.sievert@jyu.fi

²Department of Biomedical Sciences/Biochemistry, University of Veterinary Medicine, Vienna, Austria

In the evolutionary arms race between prey and predator, early risk recognition by the prey species is of paramount importance. Mammalian prey species are able to detect direct predator cues, like odors and to display appropriate defensive behaviors. Not much is known about indirect predation cues in mammals, i.e. the scent of scared individuals detectable by conspecifics, and how they affect recipient behavior. Current theories predict also cross-generational, maternally transferred, effects of increased predation risk or fear to their offspring. To escape predation now or in the next generation, predation risk is suggested to delay or suppress reproduction. However, in theory, enhancement of reproduction, bet-hedging or terminal investment, may be an adaptive strategy as well. Not much is known about cross-generational effects of predation risk on offspring behavior and fitness. We assessed how direct and indirect predation cues, in the form of predator odor or odor of scared conspecifics, alarm pheromones, affect bank vole (Myodes glareolus) reproduction and pup fitness. In our experiment, we exposed males and females either directly to least weasel (Mustela nivalis) odor, to indirect alarm pheromones from weasel-scared male voles, or to control odor. The treatments were started before mating and lasted until the pups were born. Contradictory to our expectations both predator odor and alarm pheromones enhanced reproduction compared to control. Alarm pheromone treated females had a significantly higher pregnancy rate and pups from predator-treated parents were significantly heavier at birth. Stress metabolite levels were similar in the predator odor and alarm pheromone treatment. Our study provides two novel results: compared to a signal of general danger, i.e. predator odor, the odor of a scared conspecific convey an immediate risk of attack and possible death. Both cues can work at the same time and trigger enhancement of reproduction in form of final investment.

Julius-Kühn-Archiv

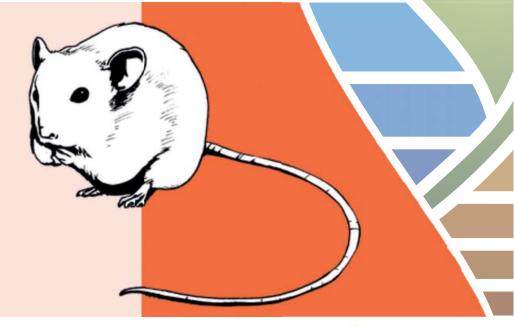
Jens Jacob, Jana Eccard (Editors)

6th International Conference of Rodent Biology and Management and

16th Rodens et Spatium

Potsdam, Germany, 3-7 September 2018

Book of Abstracts







Julius - Kühn - Archiv

Jens Jacob, Jana Eccard (Editors)

6th International Conference of Rodent Biology and Management and

16th Rodens et Spatium

Potsdam, Germany, 3-7 September 2018

Book of Abstracts

Editors:

Jens Jacob¹ and Jana Eccard²
¹Julius Kuehn Institute, Federal Research Centre for Cultivated Plants,
Institute for Plant Protection in Horticulture and Forests, Vertebrate Research,
Toppheideweg 88, 48161 Münster, Germany
²University of Potsdam, Institute of Biochemistry and Biology,
Animal Ecology Group, Maulbeerallee 1,
14469 Potsdam, Germany

Local Organizing Committee:

Jana Eccard, University of Potsdam
Jens Jacob, Julius Kühn Institute, Federal Research Centre for Cultivated Plants, Münster
Daniela Reil, Julius Kühn Institute, Federal Research Centre for Cultivated Plants, Münster
Christiane Scheffler, University of Potsdam
Elke Seydewitz, University of Potsdam

Scientific organising committee:

Emil Tkadlec (Czech Republic); Frauke Ecke (Sweden); Grant Singleton (Philippines): Heikki Henttonen (Finland); Jana Eccard (Germany); Jens Jacob (Germany); Lyn Hinds (Australia); Prince Kaleme (Congo); Xavier Lambin (UK); Zhibin Zhang (China)

International Steering Committee Rodens et Spatium:

Abraham Haim (Israel); Alexey Surov (Russia); Ana Maria Benedek (Romania); Boris Krasnov (Israel); Emil Tkadlec (Czech Republic); Éric Le Boulengé (Belgium); Farida Khammar (Algeria); František Sedláček (Czech Republic); Gert Olsson (Sweden); Grant Singleton (Australia); Heikki Henttonen (Finland); Jan Zima (Czech Republic); Jean-François Cosson (France); Linas Balčiauskas (Lithuania); Maria da Luz Mathias (Portugal); Molly McDonough (USA); Mustafa Sözen (Turkey); Nigel Yoccoz (Norway); Olga Osipova (Russia); Takuya Shimada (Japan); Victor Sánchez Cordero (Mexico); Xavier Lambin (United Kingdom); Yasmina Dahmani (Algeria)

International Steering Committee

International Conference of Rodent Biology and Management:

Andrea Byrom (New Zealand); Charley Krebs (Canada); Grant Singleton (Philippines); Jens Jacob (Germany); Jiqi Lu (China); Lyn Hinds (Australia); Nico Avenant (South Africa); Peter Banks (Australia); Peter Brown (Australia); Regino Cavia (Argentina); Rhodes Makundi (Tanzania); Roger Pech (New Zealand); Steven Belmain (UK); Sudarmaji (Indonesia); Zhibin Zhang (China)

Bibliografische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation In der Deutschen Nationalbibliografie: detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

ISSN 1868-9892 ISBN 978-3-95547-059-3 DOI 10.5073/jka.2018.459.000



Alle Beiträge im Julius-Kühn-Archiv sind unter einer Creative Commons - Namensnennung - Weitergabe unter gleichen Bedingungen -4.0 Lizenz veröffentlicht.

Printed in Germany by Arno Brynda GmbH, Berlin.