
Population Dynamics – Session 1

Rainfall and changing population dynamics during a long-term CMR study of *Mastomys natalensis* in Tanzania

Herwig Leirs¹, Lucinda Kirkpatrick¹, Joachim Mariën¹, Vincent Sluydts¹, Loth S. Mulungu², Christopher A. Sabuni², Apia W. Massawe², Rhodes H. Makundi²

¹University of Antwerp, Belgium, herwig.leirs@uantwerpen.be

²Sokoine University of Agriculture, Morogoro, Tanzania

The multimammate mouse, *Mastomys natalensis*, is a common and widely distributed rodent in agriculture and peridomestic environments in most of Africa. It is a serious pest in cereal fields and causes devastating damage during outbreak years. Earlier work in Tanzania could link these outbreaks to unusually abundant early rainfall (in October-December) leading to aseasonal breeding resulting in an additional generation within a single year, causing a tenfold increase newly recruited individuals. After this initial work in the 1980s, we have carried out capture-recapture studies in a permanent 3 ha study grid in Morogoro, Tanzania, since 1994. Every fourth week (sometimes more frequent), animals have been live trapped during three consecutive days, marked individually and released. So far, this has resulted in 321 trap sessions, and with in total 64,913 captures of 28,226 individual *Mastomys natalensis*. Over these almost 25 years, population dynamics continued to show a very regular seasonal pattern with interannual variation. However, outbreaks have become very rare, the amplitude of the fluctuations has become lower and the average abundance shows a decreasing trend. Breeding remained seasonal but the breeding season is shortened. The relation between October-December rainfall and outbreaks has become less clear. The changes seem to be linked to changes in rainfall. There has indeed been a decrease in annual precipitation over the whole period although the average amount of rainfall in October-December has remained similar. Apart from the decreasing total amount of rainfall, the temporal distribution of rainfall during the wet season seems to have changed. These changes did not happen gradually but started about 15 years ago with a second non-linear change around 2012. We investigate the relation between the changes in rainfall patterns and population dynamics and what the possible consequences could be.

4 5 9

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-Institut
Bundesforschungsinstitut für Kulturpflanzen

4 5 9

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 Kühn Institute, Federal Research Centre for Cultivated Plants,
Institute for Plant Protection in Horticulture and Forests, Vertebrate Research,
Toppeideweg 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.