

Thermal biology of two sympatric gerbil species:
the physiological basis of temporal partitioning

Bo-Yang Ding, Qing-Sheng Chi, Wei Liu, Yao-Long Shi, De-Hua Wang



PII: S0306-4565(17)30516-8
DOI: <https://doi.org/10.1016/j.jtherbio.2018.03.025>
Reference: TB2090

To appear in: *Journal of Thermal Biology*

Received date: 4 December 2017
Revised date: 19 March 2018
Accepted date: 26 March 2018

Cite this article as: Bo-Yang Ding, Qing-Sheng Chi, Wei Liu, Yao-Long Shi and De-Hua Wang, Thermal biology of two sympatric gerbil species: the physiological basis of temporal partitioning, *Journal of Thermal Biology*, <https://doi.org/10.1016/j.jtherbio.2018.03.025>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Thermal biology of two sympatric gerbil species: the physiological basis of temporal partitioning

Bo-Yang Ding^{a,b}, Qing-Sheng Chi^a, Wei Liu^{a,b}, Yao-Long Shi^a, De-Hua Wang^{a,b*}

^aState Key Laboratory of Integrated Management of Pest Insects and Rodents, Institute of Zoology, Chinese Academy of Sciences, 1 Beichen West Road, Chaoyang, Beijing 100101, China

^bUniversity of the Chinese Academy of Sciences, Beijing 100049, China

*Corresponding author. Dehua Wang, Ph.D Address: State Key Laboratory of Integrated Management of Pest Insects and Rodents, Institute of Zoology, Chinese Academy of Sciences, 1 Beichen West Road, Chaoyang, Beijing 100101, China Tel.: 8610 64807073; fax: 8610 64807099. wangdh@ioz.ac.cn

Abstract

Sympatric species can coexist through ecological resource partitioning as for example for habitat, food or time. However, a detailed understanding of the basic thermal physiology, crucial for temporal partitioning, is currently lacking, especially for the desert rodents. Here, we compare the physiological performance with regard to thermal energetics and morphological traits of two sympatric gerbils from the Gobi desert of Inner Mongolia, China. The diurnally active *Meriones unguiculatus* and the nocturnally active *M. meridianus*. The diurnal *M. unguiculatus* had more brown adipose tissue (BAT) mass and capacity for non-shivering thermogenesis (NST), a higher resting metabolic rate (RMR) at low ambient temperatures (T_a) and a lower upper critical temperature of the thermal neutral zone (TNZ) than the nocturnal *M. meridianus*. The overall thermal conductance and lower critical temperatures of *M. meridianus* were also lower than that of *M. unguiculatus*, permitting the former to maintain a stable body temperature (T_b) when exposed to high T_a . We found no differences in body mass, and total evaporative water loss (TEWL) between the two

Download English Version:

<https://daneshyari.com/en/article/8650047>

Download Persian Version:

<https://daneshyari.com/article/8650047>

[Daneshyari.com](https://daneshyari.com)