

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/341549584>

# The first finding of parasitic mite, *Parasteatonyssus nyctinomi* (Mesostigmata: Gamasina: Macronyssidae), in Namibia

Article in *Journal of the South African Veterinary Association* · May 2020

DOI: 10.4102/jsava.v91i0.2002

CITATIONS

0

READS

106

5 authors, including:



**Maria Orlova**

University of Tyumen

51 PUBLICATIONS 205 CITATIONS

[SEE PROFILE](#)



**Theresa M. Lavery**

Colorado State University

14 PUBLICATIONS 72 CITATIONS

[SEE PROFILE](#)



**Will K Reeves**

Animal and Plant Health Inspection Service

256 PUBLICATIONS 2,492 CITATIONS

[SEE PROFILE](#)



**Elena M. Gratton**

Pennsylvania State University

6 PUBLICATIONS 1 CITATION

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Earthworms in Central America and the Caribbean [View project](#)



GMO safety [View project](#)

# The first finding of parasitic mite, *Parasteatonyssus nyctinomi* (Mesostigmata: Gamasina: Macronyssidae), in Namibia

**Authors:**

Maria V. Orlova<sup>1,2</sup>   
 Theresa M. Lavery<sup>3</sup>   
 Will K. Reeves<sup>4</sup>   
 Elena M. Gratton<sup>3</sup>   
 Mallory L. Davies<sup>3</sup> 

**Affiliations:**

<sup>1</sup>Institute of X-Bio,  
University of Tyumen,  
Tyumen, Russia

<sup>2</sup>Laboratory of biodiversity  
monitoring, National  
Research Tomsk State  
University, Tomsk, Russia

<sup>3</sup>Department of Fish, Wildlife,  
and Conservation Biology,  
Colorado State University,  
Fort Collins, United States

<sup>4</sup>C. P. Gillette Museum of  
Arthropod Diversity,  
Museum Affiliate, Colorado  
State University, Fort Collins,  
United States

**Corresponding author:**

Maria Orlova,  
masha\_orlova@mail.ru

**Dates:**

Received: 22 July 2019

Accepted: 12 Feb. 2020

Published: 21 May 2020

Sixty-four individuals of a macronyssid mite, *Parasteatonyssus nyctinomi* (Zumpt, Patterson 1951), were identified from Egyptian free-tailed bats *Tadarida aegyptiaca* (É. Geoffroy 1818) (Chiroptera: Molossidae) captured in the Kunene region of Namibia (southern Africa). This is the first report on *P. nyctinomi* in the country.

**Keywords:** *Parasteatonyssus nyctinomi*; Macronyssidae; *Tadarida aegyptiaca*. Namibia; Egyptian free-tailed bat.

## Introduction

Species in the family Macronyssidae Oudemans 1936 include parasites of mammals, birds and reptiles. The more derived macronyssidae, subfamily Ornithonyssinae Lange 1958, are a relatively uniform group characterised by some specific morphological peculiarities (Radovsky 2010). Genus *Parasteatonyssus* was derived from the genus *Ornithonyssus* Sambon 1928 by Radovsky (1966) and includes bat ectoparasites (mostly parasitising free-tailed bats [Chiroptera: Molossidae]). The genus contains the following five species: *Parasteatonyssus cornutus* (Keegan, 1956), *Parasteatonyssus hoogstraali* (Keegan, 1956), *Parasteatonyssus jayanti* Advani, Vasirani, 1981, *Parasteatonyssus lingeraji* (Hiregaudar, Bal, 1956) and *Parasteatonyssus nyctinomi* (Zumpt, Patterson, 1951) (Radovsky 2010), but a lack of complete and comprehensive knowledge of the ecology of principal hosts of this genus – free-tailed bats (including their host–parasite relationship) – does not allow accurate conclusions about the systematics and distributions of these mites. Only two species (*P. cornutus* and *P. nyctinomi*) have been recorded previously in Africa.

This article presents new findings about *P. nyctinomi* from the Egyptian free-tailed bat, *Tadarida aegyptiaca* (É. Geoffroy, 1818) (Chiroptera: Molossidae), in Namibia.

## Materials and methods

The research was conducted on Namib Desert bats and their ectoparasites in the Kunene region of northwestern Namibia. Bats were captured from 06 December 2016 to 04 April 2017 by deploying mist nets, and captured individuals were examined intensively for ectoparasites. Bats were morphologically identified using taxonomic descriptions given by Monadjem et al. (2010). All ectoparasites were removed with forceps, pooled into one sample for each individual bat and preserved in 95% ethanol before the bats were released. For each ectoparasite sample, the mites were transferred into a new vial containing 70% ethanol; all mites were sent to the Institute of Environmental and Agricultural Biology (X-Bio) of University of Tyumen (Russia) for species identification. Mites were mounted on permanent slides with Faure–Berlese mounting medium (Whitaker 1988). Morphological identification of mites was performed by one of the authors (M.O.), according to the keys given by Micherdzinski (1980) and Radovsky (2010). Photographs were taken with a digital camera AxioCam ICc5 (Zeiss, Germany) via a compound microscope AxioImager A2 (Zeiss, Germany) with a phase-contrast and differential interference contrast (DIC) objectives. All measurements are given in micrometers ( $\mu\text{m}$ ).

**How to cite this article:** Orlova, M.V., Lavery, T.M., Reeves, W.K., Gratton E.M. & Davies, M.L., 2020, 'The first finding of parasitic mite, *Parasteatonyssus nyctinomi* (Mesostigmata: Gamasina: Macronyssidae), in Namibia', *Journal of the South African Veterinary Association* 91(0), a2002. <https://doi.org/10.4102/jsava.v91i0.2002>

**Copyright:** © 2020. The Authors. Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

**Read online:**

Scan this QR  
code with your  
smart phone or  
mobile device  
to read online.

Voucher specimens mounted on slides have been deposited at the collection centre of the University of Tyumen's Museum of Zoology, Tyumen, Russia.

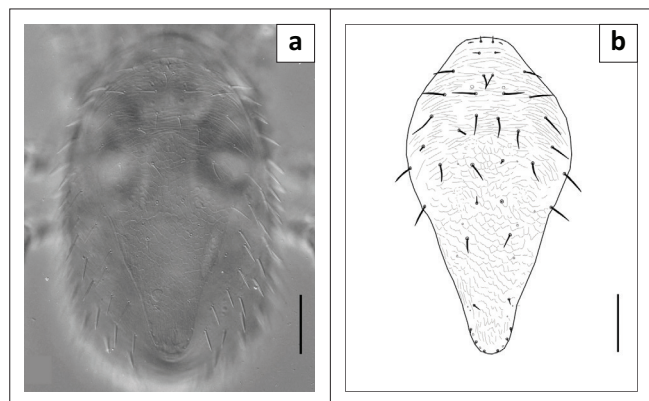
### Ethical considerations

All applicable institutional, national and international guidelines for the care and use of animals were followed. Fieldwork was conducted in accordance with the guidelines of Colorado State University's Institutional Animal Care and Use Committee (Protocol #15-6140A) and the Ministry of Environment and Tourism, Republic of Namibia (research/collecting permits #2122/2016 and #2225/16).

### Results

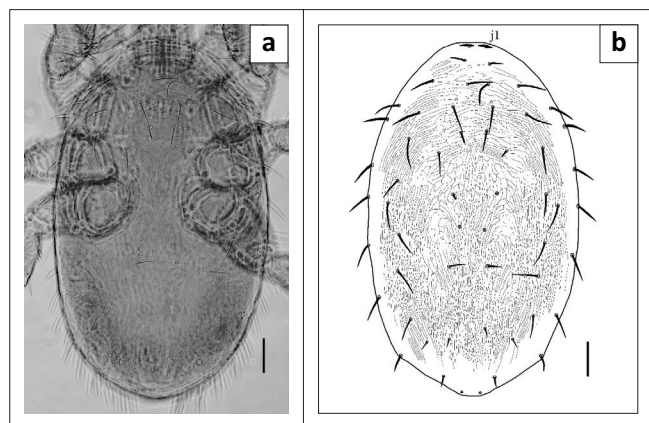
Sixty-four specimens of macronyssid mites were obtained from four Egyptian free-tailed bat, *T. aegyptiaca*, individuals in three localities: Spaarwater Pos (23° 68' S, 15° 19' E) (20 individuals), Sesfontein (19° 12' S, 13° 62' E) (14 individuals) and Hoanib Skeleton Coast Camp (19° 36' S, 13° 15' E) (30 individuals).

Mites were morphologically identified as 41 females (Figure 1), seven males (Figure 2) and 16 protonymphs of *P. nyctinomi* (Zumpt and Patterson, 1951).



Source: Images courtesy M.V. Orlova

**FIGURE 1:** *Parasteatonyssus nyctinomi*, ♀: (a) photograph, dorsal view; (b) drawing, dorsal shield. Scale bar: 100  $\mu$ m.



Source: Images courtesy M.V. Orlova

**FIGURE 2:** *Parasteatonyssus nyctinomi*, ♂: (a) photograph, dorsal view; (b) drawing, dorsal shield. Scale bar: 50  $\mu$ m.

### Discussion

This is the first report from Namibia on *P. nyctinomi*. To our knowledge, previous findings providing the first description of *P. nyctinomi* are known from South Africa (Zumpt, Patterson, 1951). *Type host* of *P. nyctinomi* was *Nyctinomus bocagei* Seabra 1900 (Chiroptera: Molossidae) (Zumpt, Patterson, 1951) – a junior synonym (a name which describes the same taxon as a previously published name) of *T. aegyptiaca*. The Egyptian free-tailed bat is widely distributed throughout Africa, except parts of the northwest and east through Arabia and the Middle East to southern Asia as far east as Bangladesh and south to Sri Lanka (Skinner, Chimimba, 2005). Accepting that *P. nyctinomi* is a specific ectoparasite of *T. aegyptiaca* is true, we can expect new records of the mite in the Palearctic part of Africa, Arabia and India where *T. aegyptiaca* is endemic. The lack of records is most likely because of collection difficulties. Because of a lack of knowledge about the life cycle of *P. nyctinomi*, more studies are necessary to determine the principal host and geographic distribution of this parasite species.

### Acknowledgements

We thank B. Kondratieff, K. Huyvaert, B. Johnson, and C. Farrell for providing access to laboratory space, microscopes, and references at Colorado State University.

### Competing interests

The authors have declared that no competing interests exist.

### Authors' contributions

All authors contributed equally to this work.

### Funding information

This work was supported by a National Science Foundation Graduate Research Fellowship to Theresa M. Lavery and by the National Research Tomsk State University Competitiveness Improvement Program to Maria V. Orlova.

### Data availability statement

Data sharing is not applicable to this article as no new data were created or analysed in this study.

### Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

### References

- Micherdzinski, W., 1980, *Eine Taxonomische analyse der Familie Macronyssidae Oudemans, 1936. 1. Subfamilie Ornithonyssinae Lange, 1958 (Acarina: Mesostigmata)*, Polska Akademia Nauk Zaklad Zoologii Systematycznej i Doswiadczalnej, Warszawa.
- Monadjem, A., Taylor P.J., Cotterill, F.P.D. & Schoeman, M.C., 2010, *Bats of southern and central Africa: A biogeographic and taxonomic synthesis*, 596 pp., Wits University Press, Johannesburg.
- Radovsky, F., 1966, 'Revision of the macronyssid and laelapid mites of bats: Outline of classification with descriptions of new genera and new type species', *Journal of Medical Entomology* 3(1), 93–99. <https://doi.org/10.1093/jmedent/3.1.93>

Radovsky, F., 2010, *Revision of genera of the parasitic mite family Macronyssidae (Mesostigmata: Dermanyssoidea) of the world*, 170 pp., Indira Publishing House, West Bloomfield, MI.

Skinner, J.D. & Chimimba, C.T., 2005, *The mammals of the Southern African subregion*, 814 pp., Cambridge University Press, Cambridge.

Whitaker, J.O. Jr., 1988, 'Collecting and preserving ectoparasites for ecological study', in T.H. Kunz (ed.), *Ecological and behavioral methods for the study of bats*, pp. 459–474, Smithsonian Institution Press, Washington, DC.

Zumt, F. & Patterson, P.M., 1951, 'Further notes on laelaptid mites parasitic on vertebrates. A preliminary study to the Ethiopian fauna', *Journal of the Entomological Society of Southern Africa* 14(2), 63–93.