



A review of quill mites (Acari: Syringophilidae) parasitising Kenyan birds

MIROSLAVA KLIMOVIČOVÁ¹, PETER MIKULA², NJOKI KAHURE³ & MARTIN HROMADA^{1,4}

¹Laboratory and Museum of Evolutionary Ecology, Department of Ecology, Faculty of Humanities and Natural Sciences, University of Prešov, 17. novembra 1, 080 01 Prešov, Slovakia. E-mail: mklimovicova@gmail.com

²Department of Zoology, Faculty of Science, Charles University in Prague, Viničná 7, 128 43 Praha 2, Czech Republic

³Department of Zoology, National Museums of Kenya, Museum Hill Road, P.O. Box 40658, P.C. 00100, Nairobi, Kenya

⁴Faculty of Biological Sciences, University of Zielona Góra, Szafrana 1, 65-516 Zielona Góra, Poland

Abstract

Two new species of quill mites (Acari: Prostigmata: Syringophilidae) collected from passeriform and coraciiform birds from Kenya are described: *Neoaulonastus apalis* **sp. nov.** from *Apalis porphyrolaema* Reichenow and Neumann (Passeriformes: Cisticolidae) and *Peristerophila upupi* **sp. nov.** from *Upupa epops* Linnaeus (Coraciiformes: Upupidae). Additionally, 3 new host species: *Cisticola hunteri* Shelley, 1889; *Acrocephalus baeticatus* (Vieillot, 1817) and *Ploceus xanthops* (Hartlaub, 1862) from Kenya and two new localities are recorded for genera: *Aulobia* Kethley, 1970; *Neoaulonastus* Skoracki, 2004 and *Syringophiloidus* Kethley, 1970. The previous and the latest knowledge about syringophilid mites from Kenya is summarized in tabular form.

Key words: Acari, Cisticolidae, ectoparasites, Kenya, Syringophilidae, quill mites, Upupidae

Introduction

The quill mites of the family Syringophilidae inhabit the calamus of different feather types. A possible number of syringophilid species is predicted on more than 5000 species (Johnston & Kethley 1973). To date, more than 320 species grouped in 60 genera from more than 470 bird species belonging to 24 orders are known (Skoracki *et al.* 2012, 2014a; Glowska & Schmidt 2014).

Bird fauna of the Ethiopian region comprises one fifth of approximately 10 000 bird species in the world (del Hoyo *et al.* 1996; Burgess *et al.* 2004). Only 69 quill mite species belonging to 30 genera from 86 bird species have been reported in this region (Klimovičová *et al.* 2014; Skoracki *et al.* 2014a, b).

Bird species richness in Eastern Africa is extremely high in Kenya alone, there live as much as 1114 species (Clements *et al.* 2012). Despite the high bird species richness in Kenyan region, their ectoparasites are still mostly unexplored. Till now, there are known only nine quill mite species belonging to six genera: *Neoaulonastus* Skoracki; *Neosyringophilopsis* Skoracki and Sikora; *Picineoaulonastus* Skoracki, Klimovičová, Muchai and Hromada, 2014; *Picobia* Haller; *Syringophiloidus* Kethley, 1970; *Syringophilopsis* Kethley, 1970; which parasitise in quills of nine host species (Skoracki *et al.* 2011, 2014a; Skoracki & Hromada 2013). Three species are monoxenous with type locality in Kenya: *Syringophilopsis dicruri* Skoracki, Hromada and Wamiti, 2011; *Picobia illadopsae* Skoracki and Hromada, 2013 and *Neosyringophilopsis lybidus* Skoracki, Klimovičová, Muchai and Hromada, 2014.

In this paper, we provide descriptions of two new species: *Neoaulonastus apalis* **sp. nov.** from *Apalis porphyrolaema* Reichenow and Neumann (Passeriformes: Cisticolidae) and *Peristerophila upupi* **sp. nov.** from *Upupa epops* Linnaeus (Coraciiformes: Upupidae). Complete syringophilid fauna of the Kenyan region is summarized in Table 1.

sampling and technical help. This study was financially supported by grants VEGA 1/1244/12 and OPV ITMS 26110230119. Additionally, MK was financially supported by LLP/Erasmus—student mobility for placement 2013 under Grant number 704/2013/NEC/7553.

References

- Bochkov, A.V. & Galloway, T.D. (2001) Parasitic cheyletoid mites (Acari: Cheyletoidea) associated with passeriform birds (Aves: Passeriformes) in Canada. *Canadian Journal of Zoology*, 79, 2014–2028.
<http://dx.doi.org/10.1139/z01-160>
- Bochkov, A.V., Skoracki, M., Hendricks, S.A. & Spicer, G.S. (2011) Further investigations of the mite genus *Syringophiloidus* Kethley, 1970 (Acariformes: Syringophilidae) from North American passerines. *Systematic Parasitology*, 79, 201–211.
<http://dx.doi.org/10.1007/s11230-011-9306-y>
- Burgess, N., D'Amico-Hales, J., Underwood, E., Dinerstein, E., Olson, D., Itoua, I., Schipper, J., Ricketts, T. & Newman, K. (2004) *Terrestrial ecoregions of Africa and Madagascar: a continental assessment*, Washington, D.C: Island Press.
- Clark, G.M. (1964) The acarine genus *Syringophilus* in North American birds. *Acarologia*, 6, 76–92.
- Clements, J.F., Schulenberg, T.S., Iliff, M.J., Sullivan, B.L., Wood, C.L. & Roberson, D. (2012) The eBird/clements checklist of birds of the world: Version 6.7. The Cornell Lab Ornithology, Ithaca, New York. Available from: www.birds.cornell.edu/clementschecklist/downloadable-clements-checklist (Accessed 16 October 2013)
- del Hoyo, J., Elliott, A. & Sargatal, J. (1996) *Handbook of the Birds of the World, Vol. 3. Hoatzin to Auks*. Lynx Edicions, Barcelona, Spain, 821 pp.
- Fain, A., Bochkov, A.V. & Mironov, S.V. (2000) New genera and species of quill mites of the family Syringophilidae (Acari: Prostigmata). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique*, 70, 33–70.
- Fritsch, W. (1958) Die milbengattung *Syringophilus* Heller, 1880 (subordo Trombidiformes, Fam. Myobiidae Megnin, 1877). *Zoologische Jahrbücher Systematik*, 86, 227–234.
- Grandjean, F. (1939) Les segments postlarvaires de l'hysterosoma chez les oribates (Acariens). *Bulletin de la Société zoologique de France*, 64, 273–284.
- Grandjean, F. (1944) Observations sur les acariens de la famille des Stigmaeidae. *Archives des Sciences Physiques et Naturelles*, 26, 103–131.
- Głowska, E. & Schmidt, B. K. (2014) New quill mites (Cheyletoidea: Syringophilidae) parasitizing the black-headed paradise-flycatcher *Terpsiphone rufiventer* (Passeriformes: Monarchidae) in Gabon. *Zootaxa*, 3786 (1), 57–64.
<http://dx.doi.org/10.11646/zootaxa.3786.1.3>
- Johnston, D.E. & Kethley, J.B. (1973) A numerical phenetic study of the quill mites of the family Syringophilidae (Acari). *Journal of Parasitology*, 59, 520–530.
<http://dx.doi.org/10.2307/3278787>
- Kethley, J.B. (1970) A revision of the family Syringophilidae (Prostigmata: Acarina). *Contributions of the American Entomological Institute*, 6, 1–76.
- Kethley, J.B. (1990) Acarina: Prostigmata (Actinedida). In: Dindal, D.L. (Ed.), *Soil Biology Guide*. Wiley and Sons, New York, pp. 667–754.
- Klimovičová, M., Smofák, R., Njoroge, P. & Hromada, M. (2014) A new species and new host records of the quill mites (Acari: Syringophilidae) associated with sunbirds (Passeriformes: Nectariniidae). *Acta Parasitologica*, 59, 255–258.
<http://dx.doi.org/10.2478/s11686-014-0233-3>
- Skoracki, M. (1999) New genus and species of Syringophilidae (Acari: Prostigmata) from Eurasian Reed-Warbler, *Acrocephalus scirpaceus* (Sylviidae: Passeriformes) (Acari: Prostigmata). *Genus*, 10, 155–162.
- Skoracki, M. (2011) Quill mites (Acari: Syringophilidae) of the Palaearctic region. *Zootaxa*, 2840, 1–415.
- Skoracki, M., Antczak, M., Riegert, J., Fainova, D. & Mikes, V. (2009) New species and new records of quill mites (Acari: Syringophilidae) inhabiting african passerines (Aves: Passeriformes). *Acta Zoologica Academiae Scientiarum Hungaricae*, 55, 123–137.
- Skoracki, M. & Dabert, J. (2002) A review of parasitic mites of the family Syringophilidae (Acari, Prostigmata) from African birds, with descriptions of four new species. *Acta Parasitologica*, 47, 137–146.
- Skoracki, M., Hendricks, S. & Spicer, G.S. (2010b) Systematics of the ectoparasitic quill mites of the genus *Aulobia* Kethley, 1970 (Acari: Syringophilidae) with the description of a new species. *Zootaxa*, 2399, 31–41.
- Skoracki, M. & Hromada, M. (2013) A review of picobiine mites (Acari: Syringophilidae: Picobiinae) parasiting African birds. *Folia Parasitologica*, 60, 192–212.
<http://dx.doi.org/10.14411/fp.2013.022>
- Skoracki, M., Hromada, M. & Unsoeld, M. (2013) Three new quill mite species of the genus *Neoaulonastus* Skoracki (Acari: Syringophilidae) parasiting passerines in Tanzania. *Zootaxa*, 3616, 367–377.
- Skoracki, M., Hromada, M. & Wamiti, W. (2011) A new species and new host records of syringophilid mites (Acari: Syringophilidae) from passerines from Kenya. *Zootaxa*, 2922, 34–40.
- Skoracki, M., Klimovičová, M., Muchai, M. & Hromada, M. (2014a) New taxa of the family Syringophilidae (Acari:

- Prostigmata) from African barbets and woodpeckers (Piciformes: Lybiidae, Picidae). *Zootaxa*, 3768 (2), 178–188.
<http://dx.doi.org/10.11646/zootaxa.3768.2.5>
- Skoracki, M., Lontkowski, J. & Stawarczyk, T. (2010a) New taxa of the parasitic quill mites associated with accipitrid birds indicating close relationship of falconid birds to Psittaci–Columbi clade. *Journal of Natural History*, 44, 1203–1214.
<http://dx.doi.org/10.1080/00222931003632757>
- Skoracki, M. & Sikora, B. (2003) Quill mites (Acari: Prostigmata: Syringophilidae) from African passeriform birds. *Zootaxa*, 129, 1–10.
- Skoracki, M., Unsoeld, M., Kavetska, K. & Kaszewska, K. (2014b) Quill mites of the subfamily Picobiinae (Acari: Syringophilidae) associated with woodpeckers (Aves: Piciformes: Picidae). *Acta Parasitologica*, 59, 68–79.
<http://dx.doi.org/10.2478/s11686-014-0210-x>
- Skoracki, M., Zabludovskaya, S. & Bochkov, A.V. (2012) A review of Prostigmata (Acariformes: Trombidiformes) permanently associated with birds. *Acarina*, 20, 67–107.