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A NEW CHEYLETID MITE METACHEYLETIA NGAI N. SP. (ACARIFORMES: CHEYLETIDAE) FROM QUILLS OF CORYTHAIXOIDES LEUCOGASTER (MUSOPHAGIDAE) FROM TANZANIA

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ABSTRACT — Metacheyletia ngaii n. sp. (Acariformes: Cheyletidae) is described from quills of Corythaixoides leucogaster (Rüppell, 1842) (Cuculiformes: Musophagidae) from Tanzania.

KEYWORDS — Acari; Cheyletidae; Metacheyletia; systematics; feather quills; Corythaixoides leucogaster

INTRODUCTION

The genus Metacheyletia Fain, 1972 (Acariformes: Cheyletidae) is a single genus of the tribe Metacheyletiini (Bochkov and Fain, 2001). Mites of this genus, currently including four species, live inside the feather quills. Three species are known from various parrots (Psittaciformes: Psittacidae), M. obesa Fain, 1972 from Psittacula krameri (Scopoli, 1769) from Africa (Fain, 1972, 1980), M. longiseta Atyeo et al., 1984 from Amazona finschi (Sclater, 1864) from Mexico (Atyeo et al., 1984), M. amazonae Bochkov & O'Connor, 2003 from Amazona amazonica (Linnaeus, 1766) from Guyana (Bochkov and O'Connor, 2003); one species, M. degenerata Fain & Bochkov, 2003 was described from Serinus mozambicus (Muller, 1776) (Passeriformes: Fringillidae) from Tanzania (Fain and Bochkov, 2003).

Few data are known on biology of these mites, and suggestions concerning their mode of life are controversial. Atyeo et al. (1984) believed that these mites are predators because their movable cheliceral digits are too short to penetrate the quill wall, pierce the quill wall and reach live tissues of a host. Bochkov and Fain (2001) considered these mites parasitic based on morphological characters such as the short tarsi of legs I–III, the absence of legs IV, the short and nude eupathidia of the palpal tarsus and the relatively small sizes of the gnathosoma and suggested that Metacheyletia spp. use the orifices in quill walls which were made by adult syringophilids.

In this paper, we describe a new species of this genus from Corythaixoides leucogaster (Rüppell, 1842) (Cuculiformes: Musophagidae) from Tanzania. A key to females of all known species of the genus Metacheyletia is provided.
**Figure 1:** Metacheyletia ngaii sp. nov., holotype female. A – Dorsal view. B – Ventral view.

**Materials and Methods**

Mites were mounted in Hoyer’s medium. Drawings were made with a phase contrast Leica microscope with a camera lucida and DIC optics. In the descriptions below, the idiosomal setation follows Grandjean (1939) as adapted for Prostigmata by Kethley (1990). The nomenclature for leg setae follows that of Grandjean (1944). In predaceous cheyletids of the above listed genera, species diagnostic is mostly based on females, because males are rarely recorded and known just for a few species. All measurements are in micrometres (µm). The scientific names and classification of birds follow Clements (2007).

**Family Cheyletidae**

*Metacheyletia ngaii* n. sp.

*Figures 1 and 2*

Description — Female (holotype) — *Gnathosoma* 90 long (90 in 1 paratype) and 115 wide (120). Peritremes arch-like, each peritremal branch with 7–8 segments. Palpal femur 40 long (40) and 37 wide (35). Palpal claw with 1 basal tooth. Palpal setation: palpal femur – dF; palpal genu – dG; palpal tibia – dT1, l’T1, l”T1; palpal tarsus – smooth eupathidia amc, sul, ul’, ul”, and solenidion ω1. Subcapitular setae n absent, adoral setae ao1, ao2, and subcoxal setae elcp present. Idiosoma 495 long (585) and 355 wide (415),
ovoid. Propodonotal shield indistinct. No cupules observed. All idiosomal smooth filiform. Setae \( v_i \) 2 times shorter than \( v_e \); setae \( s_i \) and \( d_2 \) 1.4–1.5 times shorter than \( s_e \) and \( e_2 \); \( c_1 \) and \( d_1 \) about 2 times longer than \( d_2 \); \( e_1 \) longer than distance between setal bases \( c_1 \) and \( d_1 \); setae \( h_1 \) and \( h_2 \) subequal. Three pairs of pseudogenital (\( p_1–p_3 \)), 2 pairs of genitalic (\( g_1 \) and \( g_2 \)), and 3 pairs of aggenital (\( a_1–a_3 \)) setae present. Lengths of setae: \( v_i \) 30 (35), \( v_e \) 65 (70), \( s_i \) 50, \( s_e \) 70 (70), \( c_1 \) 130, \( c_2 \) 120 (125), \( d_1 \) 1120 (115), \( d_2 \) 50 (65), \( c_2 \) 80 (75), \( f_2 \) 65 (75), \( h_1 \) 120 (115), \( h_2 \) 115 (120), \( p_1–p_3 \) 23–25, \( g_1 \) and \( g_2 \) 24–25, \( a_1–a_3 \) 23–27, \( l_1 \) 35 (35), \( l_2 \) 45 (55), \( a_3 \) 35 (35). Setae \( a_4 \) absent.

Legs IV completely absent. Leg I–IV setation: I – tarsus with 7 setae (\( f_i \), \( t_i \), \( t_{i'} \), \( p_i \), \( p'_{i'} \), \( u_i \), \( u'_{i'} \)) + solenidion \( f_1 \), tibia with 4 setae (\( d_i \), \( l_i \), \( l'_{i'} \), \( v_i \)) + solenidion \( v_1 \), genu with 1 seta (\( l'_{i'} \)) + solenidion \( s_1 \), femur with 2 setae (\( d_{i'} \) and \( v_{i'} \)), trochanter without setae, coxal field with 1 seta (\( l_{i'} \)); II – tarsus with 5 setae (\( t_{i'} \), \( t_{i''} \), \( p_i \), \( p'_{i'} \), \( u_i \), \( u'_{i'} \)) + solenidion \( s_2 \), tibia with 4 setae (\( d_i \), \( l_i \), \( l'_{i'} \), \( v_i \)), genu with 1 seta (\( l'_{i'} \)), femur with 2 setae (\( d_{i'} \) and \( v_{i'} \)), trochanter and coxal field without setae; III – tarsus with 5 setae (\( t_{i'} \), \( t_{i''} \), \( p_i \), \( p'_{i'} \), \( u_i \), \( u'_{i'} \)), tibia with 4 setae (\( d_i \), \( l_i \), \( l'_{i'} \), \( v_i \)), genu with 1 seta (\( l'_{i'} \)), femur with 1 seta (\( d_{i'} \)), trochanter and coxal field without setae.

Male — Unknown.

Type Material — Holotype female and female paratype from Corythaixoides leucogaster (Rüppell, 1842) (Cuculiformes: Musophagidae), Tanzania: Tanganyika, 23 March 1960, coll. unknown.

Type deposition — All material is deposited in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Etymology — This new species is dedicated to the Maasai God – Ngai, the creator of everything.

Differential diagnosis. This new species is morphologically closest to M. degenerata. In females of both species, three pairs of aggenital setae are present and the propodonotal shield is indistinct. It differs from M. degenerata by the following features. In females of M. ngaii n. sp., setae \( v_i \) are two times shorter than \( v_e \); setae \( d_2 \) are two times shorter than \( d_1 \), setae \( h_1 \) and \( h_2 \) subequal, setae \( c_1 \), \( d_1 \), and \( e_2 \) are 130, 115–120, and 75–80 long, respectively. In females of M. degenerata, setae \( v_i \) are 1.1–1.2 times shorter than \( v_e \); setae \( d_1 \) and \( d_2 \) are subequal, setae \( h_1 \) are about 1.3 times shorter than \( h_2 \), setae \( c_1 \), \( d_1 \), and \( e_2 \) are 65, 60, and 50 long, respectively.

Remarks — The genus Metacheyletia is, probably, initially associated with parrots, because its representatives inhabit these hosts in Africa and South America. Unfortunately these mites are unknown from Australia, and records of Metacheyletia spp. from the Australian parrots would be very desirable as an additional prove of this hypothesis. The two species of this genus from non-parrot hosts, M. degenerata and M. ngaii, are still known exclusively from central Africa and morphologically very close to each other. Parrots are widely distributed in central Africa and, therefore, we suggest that in this region, mites of the genus Metacheyletia shifted on a non-parrot host from a parrot with the following dispersion and speciation on birds of different non-parrot orders.

**Key to females of the genus Metacheyletia Fain, 1972**

1. Propodonotal shield weakly developed, but distinct; setae \( a_3 \) absent (hosts – Psittacidae) ......... 3 — Propodonotal shield almost indistinct; setae \( a_3 \) present .................................... 2

2. Setae \( v_i \) 2 times shorter than \( v_e \); setae \( d_2 \) 2 times shorter than \( d_1 \); setae \( h_1 \) and \( h_2 \) subequal. Setae \( c_1 \), \( d_1 \), and \( c_2 \) 130, 115–120, and 75–80 long, respectively .......................... M. ngaii n. sp. — Setae \( v_i \) 1.1–1.2 times shorter than \( v_e \); setae \( d_1 \) and \( d_2 \) subequal; setae \( h_1 \) about 1.3 times shorter than \( h_2 \). Setae \( c_1 \), \( d_1 \), and \( c_2 \) 65, 60, and 50 long, respectively ............. M. degenerata Fain & Bochkov, 2003


4. Peritremal branches with 7–8 segments each. Propodonotal shield devoid of setae; length ratios of dorsal idiosomal setae: \( h_2:2x2, f_2:2:1 \) and \( h_2:h_1 \) 1.2–1.6:1, length of setae \( s_1 \) subequal to distance between bases of setae \( c_1–d_1 \). Setae \( v_e, s_i, s_c, c_1, e_2, f_2 \) shorter than 80 ........................................ M. amazonae Bochkov & O'Connor, 2003 — Peritremal branches with 10–11 segments each.
Propodonal shield bearing setae $vi$ and $ve$, dorsal idiosomal setae $e2$, $f2$, $h1$, and $h2$ subequal in length, ratio between length of seta $c1$ and distance between $c1$–$d1$ approximately 2.8:1. Setae $ve$, $si$, $se$, $c1$, $e2$, $f2$ longer than 100

M. longisetosa Atyeo, Kethley & Perez, 1984

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