A New Species and Five New Records of Ameroseiidae from Taiwan (Acari: Mesostigmata)

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ABSTRACT

Six species of Ameroseiidae (Berlese, 1919) are reported from Taiwan, including one new species and five new records. *Afrocychopholaelaps analiculus* sp. nov. and *Neocychopholaelaps ewae* Haitlinger, 1987 were collected from *Apis mermifera* L. The other four species, *Ameroseius magnisetosa* Ishikawa, 1972, *Ameroseius lidiæ Bregetova, 1977*, *Ameroseius matsuđiæ Ishikawa, and Ameroseius vietnamensis* Micherdzinski, 1965 were collected from soil. Ameroseiid mites from Taiwan, China, Japan, and Vietnam are listed to check the commonly distributed species. A key to the world species of the genus *Afrocychopholaelaps* is given.

Key words: Ameroseiidae, *Afrocychopholaelaps, Neocychopholaelaps, Ameroseius*, Taiwan

Introduction

Mites of the family Ameroseiidae (Berlese, 1919) were collected from store products, soil, decomposing organic matter, flower and flower visiting animals, rodents. Seven genera, *Afrocychopholaelaps, Ameroseius, Brontisparaelaps, Epicriopsis, Hattena, Sertițympanum, and Sinoseius*, and 110 species are recognized in the family.

In the 1970s, three ameroseiid species from Taiwan were recorded, *Ameroseius plumosus* (Oudemans), 1902 and *Ameroseius plumigera* Oudemans, 1930 from stored grains (Tjying, 1972), and *Neocychopholaelaps indica* Evans, 1963 from honeybee (Lo and Chao, 1975). This article adds one new species and five newly recorded species to the list of ameroseiid mites from Taiwan. Two of these species, including the new species, were collected from a feeble looking honeybee, *Apis mermifera* L., resting on a wall. The other species were collected from soil and leaf
litter samples from mountainous areas.

For identification of genus the key to the genera was adopted from Halliday (1997). Dorsal setae were nominated in accordance with Lindquist and Evans (1965).

**Afrocypholaelaps analiculus** sp. nov.

**Female**

Idiosoma elliptic, length 409 (364-436) \(\mu\)m, width 243 (216-279) \(\mu\)m. Dorsal shield entire, very weakly sclerotized with faint margin, often only recognizable by bordering longitudinal cuticular striae; lateral area faintly reticulate. Dorsal shield with 29 pairs of setae, all dorsal setae much shorter than one half the distance to next setae, smooth, except posterior 6 pairs (J4, Z4, Z5, S3, S4, S5) serrated. Sternal shield margin barely recognizable, anterior lined with many striations and hard to distinguish the border, posterior margin too faint to recognize, width at st2 level 72 (66-76) \(\mu\)m; sternal region with 4 pairs of setae. st1 and st2 on sternal shield, st3 on small platelets, st4 in cuticular striae; with 3 pairs of faint hard to see lyrifissures. Genital shield margin faint but recognizable, length 112 (106-120) \(\mu\)m, width at genital setae level 54 (47-61) \(\mu\)m, with one pair of genital setae, anterior-central genital folds can extend to or close to st2 level. Anal shield quite small, posterior half expanded, width at widest part 61 (54-65) \(\mu\)m, length 57 (53-61) \(\mu\)m, only with circum anal setae, para-anal setae at mid level of anus, slightly shorter than anus, postanal seta approximately as long as para-anal setae; cibium V-shaped, extend anteriorly or beyond para-anal setae. Six pairs of setae around anal shield, JV1, JV 2, JV 3, and ZV2 between genital shield and anal shield, JV4 laterad of and JV5 postero-laterad of anal shield, JV5 serrate in some specimens. Peritreme reaching anteriorly to the middle of coxa I. Tectum bowl shape and finely dentate, with two dorsal rows of denticles. Deutosternum narrow, hypostome with five short rows of denticles on each side of deutosternum, 3 rows posterior to palpal trochanter, one row above and one row behind hypostomal setae 4. Cheliceral chela short, movable digit with one small, non-prominent tooth, fixed digit with 2 teeth and a membranous lobe-like plus dentils.

Coxae formula: 2, 2, 2, 1; setae formula of femur, genu, tibia of leg I: 2 3/1 2/2 2, 2 3/2 2/1 2, 2 3/2 2/1 2; leg II: 2 2/1 2/1 1, 1 3/1 2/1 1, 1 2/1 2/1 2/1 1; leg III: 1 2/1 2/0 0, 1 2/1 2/1 1, 1 1/1 2/1 1; leg IV: 1 2/1 2/0 0, 2 2/1 3/0 0, 2 1/1 3/1 1. Length of leg I 384 (382-389), leg II 298 (262-323), leg III 283 (272-307), leg IV 368 (340-387). Tiny claws observable at 1000X.

**Material examined**

Holotype \(\varphi\) and paratype 3 \(\varphi\) (2 on the same slide), CHIAYI: Fenchihu 記念館, 2007-VII-20, Lucia Liu Severinghaus, ex *Apis merrifera* L. Holotype will be deposited in the National Museum of Natural Science, Taichung, Taiwan. Paratypes are deposited in the personal collection of C. C. Ho.

**Remarks**

Though tiny claws can be seen at 1000X, femur II, genu II-III, and tibia II-III of the new species are in the typical chaetotaxy of the genus *Afrocypholaelaps*. Also, the dorsal chaetotaxy and the shape of the ventral shield of the new species closely resembles those of *A. lindquisti* (Prasad, 1968) and *A. africana* (Evans, 1963). Thus we assigned the new species to the genus *Afrocypholaelaps*.

The new species is similar to *A. lindquisti*, having dorsal shield with 29 pairs of short setae of which posterior 6 pairs are serrated; lacking v3 on femur II, al2 on genu II, and pl2 on tibia II. However, it differs from *A. lindquisti* in that hypostomal setae 2 and 3 are of similar length, hypostome with five short rows of denticles on each side, anal shield expanded posteriorly, with V-shaped cibium, JV4 and JV5 located close to the anal
shield, whereas in *A. lindquisti*, hypostomal setae 2 is distinctly longer than hypostomal setae 3, hypostome with two long and one short rows of denticles; anal shield rounded, cribleum U-shaped, and JV4 and JV5 distant from the anal shield.

*A. analicullus* has cuticular striae among shields but not in the area between sternal shield and genital shield. We could not recognize the posterior margin of the sternal shield and neither the platelets that st3 insert on. However, one paratype shows the platelets after remounting the specimen.

Due to the very weak sclerotization of this species, the margin of shields, the dorsal reticulation, the denticles on tectum and hypostome, and the setae serration can only be observed at 1000X.
**Etymology**

The new species is named after the small anal shield.

Key to world species of *Afrocypholaelaps*

1. Dorsal shield with 28 pairs of setae, integument around anal shield with 4 pairs of setae——— *A. ranomafanaensis*

2. Opisthosomal dorsal with 3 pairs of serrate setae, femur II with 3 ventral setae——— *A. africana*

3. Setae *JV*4 and *JV*5 distant from anal shield, anal shield rounded with U-shaped cribium, hypostomal setae 2
distinctly longer than setae 3 .......... 

................................. A. lindquisti

- Setae JV4 and JV5 close to anal shield, anal shield expanded posteriorly, with V-shaped cribrum, hypostomal setae 2 and setae 3 similar in length .......... 

................................. A. analicillus

* Chaetotaxy of A. africana is based on Halliday (1997).

* Neocypholaelaps ewae Haitlinger, 1987

Material examined


Distribution

Vietnam, phoretic on butterfly; Taiwan.

Remarks

This mite species is recorded from Taiwan for the first time.

* Ameroseius magnisetosa Ishikawa, 1972

Material examined


Distribution

Japan, Taiwan.

Remarks

This mite species is recorded from Taiwan for the first time.

* Ameroseius lidiae Bregetova, 1977

Material examined

TAICHUNG: Tungshih 東勢, Shihchen 石城, 227990/2686725/280m, 1 ♀, 2003-XI-24, C. C. Ho, soil.

Distribution

Ukraine, Moldavia, Tajikistan, inhabiting tree hole, nest or body of rodents and insectivores; Taiwan.

A female specimen was obtained from a quarantine sample that was taken from Solivia officinalis 鼠尾草 imported from USA, 2006-VII-06.

Remarks

This mite species is recorded from Taiwan for the first time.

* Ameroseius matsudai Ishikawa, 1977

Material examined

MIAOLI: Kongguan 公館, Fayun temple 法雲寺, 236769/2705169/416m, 2 ♀, 2004-XI-28, C. C. Ho, soil in woods. NANTOU: Hsinyi 信義, Tatajia 塔塔加, Lulin pass 鹿林步道, 237789/2596524/2711m, 2 ♀, 2005-III-07, C. C. Ho, soil under Yushania niitakayamensis 玉山箭竹, Tatajia, Gigantic hemlock fir 大欖杉, 238950/2597194/2684m, 1 ♀, 2005-III-09, C. C. Ho, soil under mixed Yushania niitakayamensis and Tsuga sp. 鐵杉, Guohsing 國姓, Dakenpin Shan 大欖屏山, 232101/2661572/794m, 1 ♀, 2006-VIII-02, C. C. Ho, soil. PINTUNG: Manzhou 滿州, Nanren Shan 南仁山, beside a lake, 235372/2443053/353m, 2 ♀, 2005-II-16, C. C. Ho, soil.

Distribution

Japan, Taiwan.

Remarks

This mite species is recorded from Taiwan for the first time.

* Ameroseius vietnamensis Micherdzinski, 1965

Material examined

CHIAYI: Alishan 阿里山, Eryu Shan 兒玉山, 2588m, 2 ♀, 2003-X-26, ex soil with thick litter under Yushania niitakayamensis 玉山箭竹; NANTOU: Hsinyi 信義, Tatajia 塔塔加, Gigantic hemlock fir 大欖杉, 238950/2597194/2684m, 1 ♀, 2004-XII-10, ex soil under Tsuga sp. 鐵杉 and Yushania niitakayamensis; Tatajia 塔塔加, Lulin pass 鹿林步道, 237589/2596650/2650m, 1 ♀, 2005-I-07, ex soil under Pinus taiwanensis 三葉松 and Yushania niitakayamensis; TAICHUNG: Heping 和

Three ameroseiid mites from Taiwan were recorded previously. This paper adds 6 more species making the number of ameroseiid species in Taiwan a total of nine species. Considering the small area of Taiwan, the bio-diversity in mite fauna of Taiwan is relatively high.

Three species of ameroseiid mites are common between Taiwan and Vietnam, *A. vietnamensis*, *N. ewae*, *N. indica*, 3 species are common between Taiwan and Japan, *A. magnisetosa*, *A. matsudai*, *A. plumosus*, and 4 species are common between Taiwan and China, *A. magnisetosa*, *A. plumigera*, *A. plumosus*, *N. indica* (Table 1). Three species were recorded from three countries,
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<th>Species</th>
<th>Taiwan</th>
<th>China</th>
<th>Japan</th>
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<td><em>Afrocypholaelaps analiculius</em> sp. n.</td>
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<td><em>Ameroseius curvatus</em> Gu, Wang, et Bai, 1989</td>
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<td><em>Ameroseius decemsetosus</em> Mrcherdzinski, 1965</td>
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<td><em>Ameroseius pasivus</em> (C. L. Koch, 1839)</td>
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<td><em>Ameroseius plumosoides</em> Gu, Wang, et Bai, 1989</td>
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<td><em>Ameroseius plumosus</em> (Oudemans), 1902</td>
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<td><em>Ameroseius pulcher</em> Westerbaer, 1963</td>
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<td><em>Ameroseius taoyiensis</em> Ma, 1995</td>
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<td><em>Ameroseius variolarius</em> Ishikawa, 1972</td>
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<td><em>Ameroseius vietnamensis</em> Micherdzinski, 1965</td>
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<td><em>Neocypholaelaps hongkongensis</em> Mo, 1969</td>
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<td><em>Sinoseius lobatus</em> Bai, Gu, et Fang, 1995</td>
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*A. magnisetosa* and *A. plumosus* from Taiwan, China, and Japan; *N. indica* from Taiwan, China, and Vietnam. Studies on ameroseiid mites are not prevalent. Most ameroseiid species of China are collected from the northern or southwest part of China, and many are from rodents. There likely will be more common species between China and Taiwan if the ameroseiid mites from central and southern China are studied. Likewise, more species should be found that are
common among the countries in the Far East.

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臺灣美綾蟻科—新種和五新紀錄種（蜱螨亞綱：中氣門目）

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摘 要

記述臺灣美綾蟻科 Ameroseiidae (Berlese, 1919) —新種和五新紀錄種。新種肛小非曲尾蟻 Afrocypbalaelaps analicuillus sp. nov. 及新紀錄種肛小新曲尾蟻 Neocypholaelaps ewae Haitlinger, 1987 採自蜜蜂 (Apis mellifera L.)，其餘 4 新紀錄種肛小美綾蟻 Ameroseius magnisetosa Ishikawa, 1972 、力飲美綾蟻 Ameroseius lidiæ Bregetova, 1977 、松田氏美綾蟻 Ameroseius matsudai Ishikawa 和越南美綾蟻 Ameroseius vietnamensis Micherdzinski, 1965 採自土壤。文中列舉台灣、大陸、日本及越南的美綾蟻以比較共同分布種類，並提出非曲尾蟻 Afrocypbalaelaps 之全球種類索引。

關鍵詞：美綾蟻科、非曲尾蟻屬、美綾蟻屬、新曲尾蟻屬、臺灣。