



## Ticks and mites from a wild bird survey performed by the Wild Animal Medical Center of Rakuno Gakuen University in Japan

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### ABSTRACT

A summary of avian ticks and mites from an epidemiological survey performed by the Wild Animal Medical Center of the Graduate School of Veterinary Medicine of Rakuno Gakuen University is reported, with errata for mite taxa. Ten taxa were recorded, and their taxonomic positions are shown in a table.

**Key words:** ticks, mites, birds, Wild Animal Medical Center, Japan

Epidemiological surveys are an essential conservation tool for fully understanding infectious diseases. In 2004, we began an investigation of avian parasitic diseases at the Wild Animal Medical Center of the Graduate School of Veterinary Medicine of Rakuno Gakuen University, Japan (Asakawa 2010; Asakawa et al. 2002, 2013; Hirayama et al. 2013). This paper summarizes the findings of seven publications on avian ticks and parasitic mites (Nakamura et al. 2003; Uemura et al. 2010; Yoshino et al. 2003, 2009a, b, 2011, 2013).

During submission of a publication for the proceedings of the 14th International Congress of Acarology, Kyoto, taxonomical inconsistencies, including invalid names or synonyms for mite species, were reported to us. Here, errata are provided for the mite taxa, and a strategy for epidemic risk reduction is described.

In the publications mentioned above, the host birds included seven species, classified according to the Ornithological Society of Japan (2012): Crested auklet (*Aethia cristatella*), Crested serpent eagle (*Spilornis cheela*), Okinawa woodpecker (*Sapheopipo noguchii*), Eurasian

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magpie (*Pica pica*), Hawfinch (*Coccothraustes coccothraustes*), Chinese hwamei (*Garrulax canorus*), and Red-billed leiothrix (*Leiothrix lutea*).

A total of ten taxa of parasitic mites and ticks have been found infesting avian species (Table 1). Larvae of chigger mites and ticks were not highly prevalent on introduced birds like *G. canorus* and *L. lutea* (Yoshino et al. 2003, 2011), but because these ectoparasites are still regarded as important vectors of viral, bacterial, and protozoan diseases, the relationships

**Table 1.** Ticks and mites from wild birds.

Gen. sp. [if invalid or synonym, original name reported is given]; host, locality, date (reporter)
Superorder Parasitiformes
Order Ixodida
Superfamily Ixodoidea
Family Ixodidae
<i>Ixodes turdus</i> ; <i>Leiothrix lutea</i> , Hachioji, Tokyo, 2003-2010 (Yoshino et al. 2011)
<i>Haemaphysalis flava</i> ; <i>Garrulax canorus</i> , Hachioji, Tokyo, 1999-2001, 2003-2010, (Yoshino et al. 2003, 2011)
Order Mesostigmata
Suborder Monogynaspida
Superfamily Dermansyoidea
Family Macronyssidae
<i>Ornithonyssus sylviarum</i> [ <i>O. sylvialum</i> ]; <i>L. lutea</i> , Hachioji, Tokyo, 1999-2001 (Yoshino et al. 2003)
Superorder Acariformes
Order Trombidiformes
Suborder Prostigmata
Superfamily Trombiculoidea
Family Trombiculidae
<i>Leptotrombidium scutellare</i> ; <i>L. lutea</i> , <i>G. canorus</i> , Hachioji, Tokyo, 2003-2010 (Yoshino et al. 2011)
Superfamily Cheyletoidea
Family Harpirhynchidae
Harpirhynchinae gen. sp. [ <i>Harpyrhynchus psittaci</i> ]; <i>Coccothraustes coccothraustes</i> Ishikari District, Hokkaido, 2000-2005 (Uemura et al. 2010)
Order Sarcoptiformes
Suborder Oribatida
Superfamily Hypoderatoidea
Family Hypoderatidae
<i>Thalassornectes (Alcidectes) aukletae</i> [ <i>Hypodectes</i> sp.]; <i>Aethia cristatella</i> Tomakomai, Hokkaido, unknown (Nakamura et al. 2003)
Superfamily Analgoidea
Family Psoroptoididae
<i>Picalgoides</i> or <i>Dicamaralges</i> sp. [ <i>Neopteronysus</i> sp.]; <i>Sapheopipo noguchii</i> Yanbaru District, Okinawa, Aug., 2007 (Yoshino et al. 2013)
Family Pteronyssidae
<i>Timalinyssus</i> sp. [ <i>Mouchetia</i> sp.]; <i>L. lutea</i> , Hachioji, Tokyo, 2003-2010 (Yoshino et al. 2011)
Superfamily Pterolichoidea
Family Gabuciniidae
Gabuciniidae gen. sp. 1 [ <i>Artamacarus</i> sp.]; <i>Spilornis cheela</i> Iriomote and Ishigaki Islands, Okinawa, 2001-2009 (Yoshino et al. 2009a)
Gabuciniidae gen. sp. 2; <i>Pica pica</i> , Tomakomai, Hokkaido, Sep., 2004 (Yoshino et al. 2009b)

between population dynamics of the introduced birds and their mites and ticks should continue to be monitored.

Subalar cutaneous dried cysts, approximately 8 mm in diameter and yellow-white in color, were found on seven individuals of *C. coccothraustes* collected in the Ishikari District, Hokkaido, between March 2000 and April 2005. Many mites belonging to the subfamily Harpirhynchinae were obtained from these cysts (Uemura et al. 2010). At the time, the mites were reported as *Harpyrhynchus psittaci*, but eight genera belonging to this subfamily have been reported in passerines (Bochkov and O'Connor 2013; Skoracki et al. 2012). Therefore, the taxon should be treated as Harpirhynchinae gen. sp. from now on. Because the histopathological findings (Haematoxylin-Eosin stain) of the cysts showed hyperkeratosis, but no changes were observed (Uemura et al., 2010), these mites do not seem to be the direct cause of any fatal symptoms.

Nakamura et al. (2003) reported hypopi of hypoderatid mites from the subcutaneous pectoral tissue of *A. cristatella* in Tomakomai, Hokkaido, as *Hypodectes* sp. However, morphological characteristics and measurements of the hypopi were in accordance with those of *Thalassornectes (Alcidectes) aukletae* (Pence and Hoberg 1991). Because no remarkable findings were observed in the subcutaneous tissue (Nakamura et al., 2003), the hypoderatid mites did not seem to be responsible for any severe diseases, as was the case for the harpirhynchid mites.

Yoshino et al. (2013) reported feather mites from *S. noguchii* in Okinawa as *Neopteronysus* sp., but the morphological characteristics of the male mite was in accordance not with the family Pteronyssidae but rather with the family Psoroptoididae, especially the genera *Picalgoides* and *Dicamaralges* (Mironov 2004). Yoshino et al. (2011) reported feather mite species from *L. lutea* in Tokyo as belonging to the genus *Mouchetia*, but the generic taxa from timaliid birds has shifted to the genus *Timalinyssus*, which is specific to the avian family Timaliidae (Wang and Wang 2008). Yoshino et al. (2009a) also reported another mite family Gabuciniidae in Okinawa, *Artamacarus* sp., on host *S. cheela*. Furthermore, Yoshino et al. (2009b) reported another gabuciniid mite on host *P. pica* in Tomakomai. Because no morphological data were given for the two gabuciniid taxa (Yoshino et al., 2009a, b), we treated the former as Gabuciniidae gen. sp. 1 and the latter as Gabuciniidae gen. sp. 2 (Table 1). Although these feather mites are not regarded responsible for severe diseases, recording them is still important for conservation purposes.

Effective prevention of acarid-borne diseases should be based on an understanding of both avian ecology and arthropod biology. To achieve this, proper educational materials, especially correct acarid taxonomy, should be provided.

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