Some Ectoparasites from Philippine Owls (Strigiformes: Strigidae) with Description of a New Louse Species, *Kurodaia (Conciella) theresamunditae* Desamero & Eduardo (Amblycera: Menoponidae)

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**ABSTRACT**

Two species of Philippine owls, *Otus megalotis* Walden, 1875 (Philippine scops-owl) and *Bubo philippensis* Kaup, 1851 (Philippine eagle-owl) (Strigidae), kept at the Rescue Center of the Protected Areas and Wildlife Bureau (PAWB), Quezon City, Philippines were examined for ectoparasites during the period June 2009-February 2010. Lice and mites were found on the two species of owls. Identification of the lice specimens revealed four species, three previously known and one new to science. These were *Strigiphilus heterogenitalis* from *Otus megalotis*, *Colpocephalum turbinatum* from both *Otus megalotis* and *Bubo philippensis* and *Strigiphilus ketupae* from the latter owl species. *Kurodaia (Conciella) theresamunditae* Desamero & Eduardo is described and illustrated as a new species from *Otus megalotis*. It is characterized by having male genitalia and the associated genital sclerite different from those of the other species of the genus and subgenus to which it belongs. The mite specimens consisted of a single species identified as *Dermonoton longiventer*. The occurrence of *S. heterogenitalis* and *H. ketupae* on *Otus megalotis* and *Bubo philippensis*, respectively constitutes new host records for the species in the Philippines. The presence of *Colpocephalum turbinatum* on both owl species in this study extends the host range of the species. *Dermonoton longiventer* is reported for the first time in the Philippines.

**Key words:** *Colpocephalum turbinatum*, *Dermonoton longiventer*, ectoparasites, *Kurodaia (Conciella) theresamunditae*, Philippine owls, *Strigiphilus* spp.

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**INTRODUCTION**

The avian fauna of the Philippines is known for its high degree of endemicity. However, as a result of continued habitat destruction, increasing population density and rampant nest poaching, hunting and illegal trade, many species are threatened to extinction, placing the country as one of the “hot spots” in the world (Collar *et al.*, 1999, Kennedy *et al.*, 2000). The owl fauna of the Philippines is no exception to this threat. There are 15 species distributed to three families (Tytonidae, Phodilidae and Strigidae) and eight genera (*Tyto, Phodilus, Otus, Mimizuku, Bubo, Ninox Strix* and *Asio*). Nine of these species are endemic to the Philippines and the rest are migrants/residents *(Kennedy *et al.*, 2000). At least two species, *Bubo philippensis* (Philippine eagle-owl) and *Mimizuku gurneyi* (giant scops-owl) are listed as threatened birds under the category of vulnerable *(Collar *et al.*, 1999). For any conservation effort to succeed, knowledge of their health aspect is required such as parasitism. This becomes more important in captive breeding where the effects of parasitism are aggravated by stress due to confinement.

Very few works have been done about the ectoparasites of Philippine birds *(Eduardo, 2007). Opportunity to examine owls for parasites arose when the authors were permitted to examine birds kept at the Wildlife Rescue Center of the Protected Areas and Wildlife Bureau (PAWB), in Quezon City, Philippines. These birds from various localities...*
in the country were both confiscated and rescued from owners who obtained the birds illegally or were donated to the Center. Birds were examined for both ecto- and blood-parasites. This paper however deals with our observations on the ectoparasites. The blood parasites have already been published elsewhere (Desamero & Eduardo, 2010).

**MATERIALS & METHODS**

Two species of Philippine owls, *Otus megalotis* Walden, 1875 (Philippine scops-owl) (n=5) and *Bubo philippensis* Kaup, 1851 (Philippine eagle-owl) (n=3) both of the family Strigidae, were examined for ectoparasites during the period June 2009-February 2010. Birds were either confiscated or donated and kept at the Rescue Center of the Protected Areas and Wildlife Bureau (PAWB), Quezon City, Philippines. The two owl species examined conformed to the description and illustration by Kennedy *et al.* (2000) for each species.

Lice and mites were collected from both owl species and were fixed and stored in 70% ethyl alcohol until further study. These were then processed for examination first by keeping them in 5% potassium hydroxide solution until the soft tissues, mainly the digestive tract and its contents can be expelled easily from the body by teasing and pressing carefully with a fine needle under a stereomicroscope. These were then washed in distilled water, dehydrated in increasing grades of ethyl alcohol, cleared in oil of cloves and mounted in Canada balsam. Representative specimens were stained in Ziehl-Neelsen (carbol fuchsin) in absolute alcohol, cleared and mounted as above.

Measurements were made with the aid of a calibrated eyepiece micrometer. Photomicrographs were taken using an Olympus BX51 research microscope with digital camera attachment. Drawings were made with the aid of an Olympus drawing apparatus attached to an Olympus CX31 research microscope.

Voucher and type specimens were deposited in the Parasite Collection and Reference Center of the College of Veterinary Medicine, UPLB.

**RESULTS**

Lice and mites were collected from both owl species examined. Examination of the lice specimens revealed four species, three species of which are previously known and one is new to science. These are identified and named as follows: *Strigiphilus heterogenitalis* Emerson and Elbel, 1957 and *Strigiphilus ketupae* Emerson and Elbel, 1957, both of the family Philopteridae, suborder Ischnocera. The other two species are both of the family Menoponidae and suborder Amblycera (Price *et al.*, 2003). One of which is identified as *Colpocephalum turbinatum* Denny, 1842 and the other is new to science and named here *Kurodaia (Conciella) theresamunditae* n. sp. The specimens of mites consisted of a single species and are identified as *Dermonoton longiventer* (Megnin and Trouessart, 1884) Gaud and Mouchet, 1959 of the family Kramerellidae under the superfamily Pterolichoidea (Gaud & Atyeo, 1996).

Since *Strigiphilus heterogenitalis*, *Strigiphilus ketupae*, *Colpocephalum turbinatum* and *Dermonoton longiventer* have been adequately described and illustrated in literature, they are no longer redescribed here and photographs of only the males, which are important in species identification, and to save space are presented here based on the present materials (see Figs 1-4). The new species, *Kurodaia (Conciella) theresamunditae* Eduardo & Desamero is described below. Photographs and illustrations of its characteristic features are also provided.

*Kurodaia (Conciella) theresamunditae*
Desamero & Eduardo, n. sp.
(Figs. 5-15)

**Description:**

**Female** (n=27). Whole female as shown in fig. 5. Head with expanded preocular region and distinct preocular slit. Ocular nodus elongated or oval-shaped with dark central and light peripheral zone. Lateral margin of the head with medium, long, medium and long setae on each side, numbered 1-4 respectively (Fig. 7). Temporal region, being the widest portion of the head, with 2 very long, 2 long and numerous short to medium setae on each side. Inner
occipital setae long. Gula uniformly sclerotized, roughly v-shaped but with blunt posterior projection and with 5-6 setae on each side, rarely 4 on one side (Fig. 8). Margin of the pronotum with 8 setae on each side distributed from lateral to median as follows: short, long, short, long, medium, long, long, long (1 specimen with 4 long setae) (Fig. 9); metanotum with 5-6 long marginal setae (1 specimen with 4 and 6 long setae) and 7-10 short setae. Central mesosternal
plate 3-5 setae; central metasternal plate 6-7, occasionally 8 setae (Fig. 10). Femur of the third leg usually with 5 rows of ctenidium, however, only 3 rows are consistently present (Fig. 11). The ranges of setae from posterior to anterior are as follows: I, 6-9 (1 specimen with 5); II, 7-9 (1 specimen with 6 and 10); III, 4-9; IV, 0-2; V, 0-2. Abdominal tergites without anterior setae and with the following numbers of marginal setae flanked on each side by a short to medium setae and long postspiracular setae: I, 8-10; II, 9-15; III, 10-14; IV, 12-17; V, 12-16; VI, 10-15; VII, 10-12; VIII, 5-10. Tergite IX with 1 long and 3 medium to long marginal setae. Abdominal sternite with anterior rows of short setae (I, 0; II, 5-13; III, 8-13; IV, 12-18; V, 12-15; VI, 11-16; VII, 10-16) and marginal rows of long setae (I, 4-9; II, 8-11; III, 9-15; IV, 19-27; V, 18-25; VI, 14-20; VII, 10-16). Ctenidium on sternite III consistently with 2 rows, less often with 3 distributed as follows (from posterior to anterior): I, 13-19 (1 specimen with 20); II, 2-5; III, 0-3. Setae on the posterior row becomes longer and stouter from right to left and with 2-3 well spaced laterally displaced setae (Fig. 12). Ventral terminal portion of the abdomen as in Fig. 13. Vulva with 14-19 marginal setae which becomes longer and stouter medially and 8-15 long irregularly spaced anterior setae (1 specimen with 17). Postvulval plates each with 3-6 setae (1 specimen with 8 on one side). Anal fringe ventrally with 14-19 setae, longer and stouter laterally (usually with 2-3 stout setae on each side, less often 4 on one side); dorsally with 17-26 fine medium setae all of similar length. Dimensions (in mm): preocular width, 0.435-0.510 (0.464±0.016); temporal width, 0.580-0.675 (0.626±0.022); head length, 0.300-0.370 (0.346±0.016); prothorax width, 0.350-0.420 (0.393±0.014); metathorax width, 0.480-0.515 (0.501±0.009); total body length, 1.625-1.970 (1.811±0.066).

Male (n = 1). As for female, except for the differences in terminal segments and for slightly smaller size (Fig. 6). Genital plate with approximately 55 setae. Male genitalia as shown in Figs. 14 and 15. Dimensions (in mm): preocular width, 0.445; temporal width, 0.590; head length, 0.340; prothorax width, 0.365; metathorax width, 0.450; total body length, 1.535; genital length, 1.0750.

Type host: Otus megalotis Walden 1875
Type locality: Philippines
Type specimens and depository: Holotype (Male) and Allotype (female) (Accession No. 135-02, slide 1); Paratypes (Accession No. 135-02, slides 2-11).

Etymology: This species is named for Dr. Theresa Mundita Sison-Lim, current Director of the Protected Areas and Wildlife Bureau (PAWB), DENR, Quezon City, who has graciously allowed us to examine birds kept at the Bureau and for her keen interest in wildlife conservation and preservation.

**DISCUSSION**

*Strigiphilus heterogenitalis* belongs to the *macrogenitalis* group of *Strigiphilus* as defined by Clay (1974). The present materials of this species agree with the description, and redescription and illustration as given by Emerson and Elbel (1957), Clay (1966) and Clay (1974). *Strigiphilus ketupae* belongs to the *ketupae* group of *Strigiphilus* as defined by Clay (1966b). The present material of this species agrees with the description and illustration of Emerson and Elbel (1957) who named the species from *Bubo zeylonensis leschenaultia* from Thailand. So far this is the lone member in this *Strigiphilus* species group. Although both species were previously recorded in the Philippines (Emerson, 1971), these were found in species of owls other than those examined in the present study. There occurrence therefore on *Otus megalotis* and *Bubo philippensis* respectively constitutes new host records in the Philippines. The two species are separable by the character of their male genitalia, size and shape of the dorsal anterior plate and of the terminal sternites of the female abdomen.

The present specimens of *Colpocephalum turbinatum* conform essentially to the redescription and illustration by Price and Beer (1963b) for the species. This louse species has been recorded to commonly occurring in pigeons (Type host: *Columbia livia*), on a variety of species of the avian order Falconiformes and on a few species of owls namely: *Bubo sumatrana*, *Bubo zeylonensis leschenaultia*, *Bubo philippensis*, *Bubo sumatrana*, *Bubo brewsteri*, *Bubo zeylonensis*, etc.
Ninox connivens, Tyto alba and Tyto capensis longimembris (Price et al., 2003). The present species however, came from other owl species, Otus megalotis and Bubo philippensis thus extending the host range of this louse species. Kurodaia theresamunditae agrees essentially with the generalized diagnosis of Kurodaia as defined by Price and Beer (1963a) and fall under that genus and the subgenus Conciella following the keys of Price et al. (2003) to the Menoponidae of the Strigiformes. To date, there are about 15 valid species under Kurodaia (Conciella) described from owls (Emerson, 1960; Elbel & Emerson, 1960; Price & Beer, 1963a; Price, 1964; Carriker, 1966; Tendeiro, 1964). Kurodaia theresamunditae however differs from
all these species by the features of the male genitalia and the associated genital sclerite and many combinations of other features in the male and female. *Kurodaia (Conciella) theresamunditae* stands close to *Kurodaia (Conciella) scotopelia* Tendeiro, 1966 only with respect to the general form of the genital sclerite but differs from it in some details like trilobed posterior end in the latter and more elongate and rounded on both ends in the former. *Kurodaia (Conciella) theresamunditae* differs further from *Kurodaia (Conciella) scotopelia* in the chaetotaxy of the dorsum of the head, the lateral margins of the temporal lobes, chaetotaxy and sclerotization of the gula, number of rows of ctenidia in the abdominal

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sternite III and femur of the third leg and chaetotaxy of the female posterior end.

Our specimens of *Dermonoton longiventer* agrees with the illustration of Sohn and Noh (1994) for the species. This mite has been reported from *Strix nebulosa nebulosa*, *Bubo bubo krautschensis* and *Scotopelia peli*. The finding of *Dermonoton longiventer* on *Bubo philippensis* represents a new host and new locality record for the species.

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REFERENCES


Eduardo SL. 2007. Synopsis of the Parasites of Birds in the Philippines. National Academy of Science and Technology (NAST), Department of Science and Technology, and College of Veterinary Medicine, University of the Philippines Los Baños, Philippines.


