



RESEARCH ARTICLE

Two new records of chewing lice (Phthiraptera: Amblycera) from the Oriental honey buzzard [*Pernis ptilorhynchus* (Temminck, 1821)] and house crow (*Corvus splendens* Vieillot, 1817) in Malaysia

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ABSTRACT

We report two new records of chewing lice from avian pets in Peninsular Malaysia: *Colpocephalum apivorus* Tendeiro, 1958 from an Oriental honey buzzard (*Pernis ptilorhynchus* (Temminck, 1821)), and *Myrsidea splendenticola* Klockenhoff, 1973 from an albino house crow (*Corvus splendens* Vieillot, 1817). The scarcity of louse records from avian pets and wild birds, and the lack of louse research in Malaysia are discussed.

Keywords: Phthiraptera; Amblycera; *Colpocephalum*; *Myrsidea*; new records.

INTRODUCTION

There has been an increasing trend of keeping exotic animals as pets in Malaysia (Bernama, 2022; Ramendran, 2022). These animals, which encompass reptiles, birds and mammals, are kept for several reasons, mostly as a hobby or as a personal preference for an animal species. However, negligence over the health of these exotic pets may cause stress, malnutrition, and parasite infestations (Brown & Nye, 2006).

One group of obligate parasites commonly found on pets is lice, wingless insects that feed on their hosts by ingesting blood, feathers, mucus or skin debris (Durden, 2019). Previous studies on lice from Malaysia were mostly focused on companion animals, livestock and small mammals (Johnson, 1964; Mustafa-Babjee, 1969; Norhidayu *et al.*, 2012; Syamsul *et al.*, 2020), but less is known on lice parasitising exotic pets. In this paper, we report two new records of chewing lice from avian pets in Peninsular Malaysia: *Colpocephalum apivorus* Tendeiro, 1958 from an Oriental honey buzzard [*Pernis ptilorhynchus* (Temminck, 1821)], and *Myrsidea splendenticola* Klockenhoff, 1973 from an albino house crow (*Corvus splendens* Vieillot, 1817). Our research showed a scarcity of published information on lice from avian pets in Malaysia, emphasizing the need of more intensive monitoring of parasites affecting exotic animals in general.

MATERIALS AND METHODS

An Oriental honey buzzard and an albino crow were brought on two separate occasions to an exotic animal veterinary clinic in Kuala Lumpur for a health examination (Figure 1). The plumage of the birds

was examined for ectoparasites, using a magnifying glass. Lice were extracted with fine forceps, preserved in 70% ethanol, and sent to the parasitology laboratory of the Institute of Medical Molecular Biotechnology (IMMB), Universiti Teknologi MARA (UiTM), Sungai Buloh, to be slide-mounted following the protocols described by Palma (1978). Lice were identified based on published taxonomic keys in Price and Beer (1963), Klockenhoff (1973) and Price *et al.* (2003), using an Olympus BX53 (Japan) compound microscope. Photographs were taken using the CellD software, via the Olympus DP72 microscope digital camera. Other visual enhancements such as scale bars, arrows and numerical indicators were added using Adobe Photoshop CC.

Geographical mapping was done using the open-source software: Quantum Geographical Information System (QGIS). The shapefiles of the world countries were acquired from <https://www.efrainmaps.es>. Known locality records of *C. apivorus* and *M. splendenticola* (Figure 4) were taken from museum collections and publications by Tendeiro (1958), Price and Beer (1963); Klockenhoff (1973), Naz *et al.* (2016), Gherardi *et al.* (2021) and Eren *et al.* (2022).

RESULTS AND DISCUSSION

Three adult males and five females, plus one nymph collected from the Oriental honey buzzard were identified as *Colpocephalum apivorus*, according to its diagnostic morphological features: (1) tergites III–VIII with fewer than 20 anterior setae and essentially in a single row in males, (2) tergite IX without anterior setae in males and females, (3) median tergoventral setae of tergite VIII short and extending less than halfway to the tip of abdomen in males, (4) anus

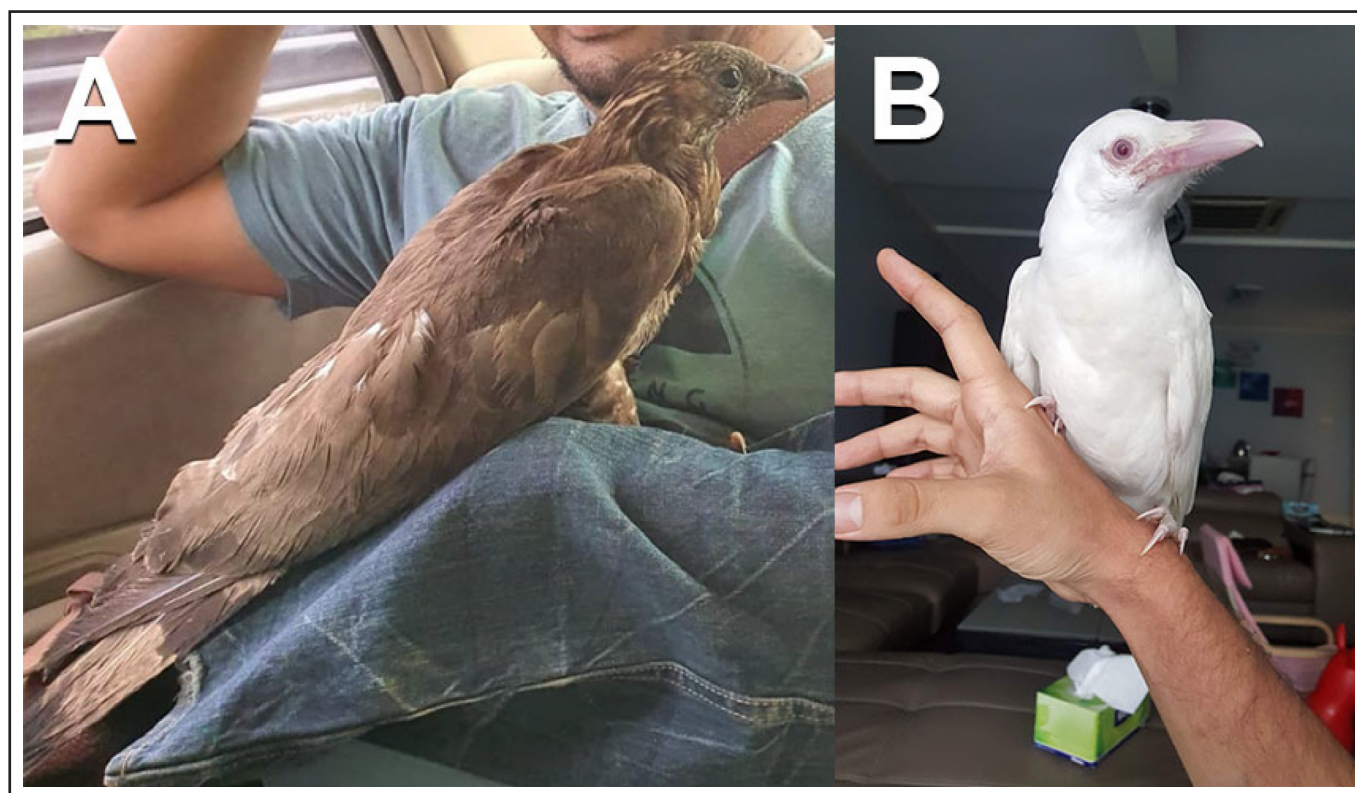


Figure 1. Avian pets brought to the exotic animal veterinarian clinic in Taman Melawati (Kuala Lumpur), hosts to the lice reported in this paper. **A.** Oriental honey buzzard (*Pernis ptilorhynchus*). Photo credit: Izwandi Mustapha. **B.** Albino house crow (*Corvus splendens*). Photo courtesy: Ruslan Yunusmetov.

indented dorsally and with inner setae in females, (5) tergoventral setae in tergites III–VI fewer than 15 in females, and (6) 11 or more tergoventral setae on tergite IV in females (Figure 2).

Three adult females found on the albino crow were identified as *Myrsidea splendenticola*, based on having tergite I extending mid-caudally and separating tergite II into two lateral sclerites (Figure 3).

The louse specimens were deposited to the Forest Research Institute Malaysia (FRIM) Entomological Reference Collection under the accession numbers FRIM-PSOCODEA-00000001 (for *C. apivorus*) and FRIM-PSOCODEA-00000002 (for *M. splendenticola*).

Our records of these two louse species are new for Peninsular Malaysia. *Colpocephalum apivorus* is known from most European countries, Angola, Cameroon, India and Thailand (Figure 4). Although originally described as a parasite of the European honey buzzard (*Pernis apivorus*), it has also been recorded from *P. ptilorhynchus* (Price & Beer, 1963; Das et al., 2000). According to Lepage (2022), Malaysia has 37 species of native birds of prey, belonging to the Accipitriformes and Falconiformes, of which 22 have records of lice and 13 of these are infested by species of *Colpocephalum* in other countries (Price et al., 2003). More louse surveys are needed on Malaysian birds of prey, especially on the 15 species without associated lice.

Kumar (2022) reported the only species of *Colpocephalum* known in Malaysia, and not from a bird of prey but on domestic pigeons (*Columba livia*) in a wildlife park in Selangor: *Colpocephalum turbinatum*, found on 42 of 80 examined pigeons. The lack of bird louse records in Malaysia is mainly due to limited studies on native wild birds, although there is a number of publications focusing mostly on poultry (Mustaffa-Babjee, 1969; Amin-Babjee et al., 1997; Lee et al., 1998; Mohammad-Zarith et al., 2017). Considering that *Colpocephalum* is one of the most speciose genera among all lice (Price et al., 2003), several species are likely to be found on Malaysian birds.

The house crow (*Corvus splendens*) is the type host of *Myrsidea splendenticola*, with a wide geographical distribution in Southern Asia (BirdLife International, 2023). However, the known distribution of *Myrsidea splendenticola* is limited to localities in India, Nepal, Pakistan, Singapore and the Maldives Islands (Figure 4). Amin-Babjee et al. (1993) reported chewing lice from house crows collected in Shah Alam, Selangor, as unidentified species of *Menopon* and *Mulcticola*. However, the number and life stages of the lice were not given. Considering that none of these two genera are known to infest crows (Price et al., 2003), in addition to the absence of figures as evidence of their identification, it is highly likely that the lice reported by Amin-Babjee et al. (1993) were misidentified.

Regarding other species of *Myrsidea* from Peninsular Malaysia, *Myrsidea malayensis* Klockenhoff (1969a) is the only species which may have been recorded from this country (Klockenhoff, 1969a, 1969b). However, the type locality of this species is ambiguous because the original description cited it as “Malakka (Malay Peninsula)”, as it was also recorded by Lampe et al. (2006). It should be noted that “Malay Peninsula” is not equivalent to “Peninsular Malaysia”, as the former name encompassed southeastern Myanmar, southwestern Thailand, Peninsular Malaysia and Singapore (Britannica, 2013), while the latter only consists of the peninsular region of Malaysia. Due to the uncertainty of the type locality, a resampling effort of *Corvus macrorhynchos* in Peninsular Malaysia is highly needed to determine whether *M. malayensis* is present in the country.

Another species of *Myrsidea* with a dubious record in Malaysia is *Myrsidea borneoensis* Klockenhoff, 1971, with type locality given as “Borneo”, without a detailed location and without further records. The type host of *M. borneoensis* is the Sunda crow (*Corvus compilor*) which is found in southern Thai-Malay Peninsula, Riau Archipelago, Sumatra and its associated islands, and Borneo

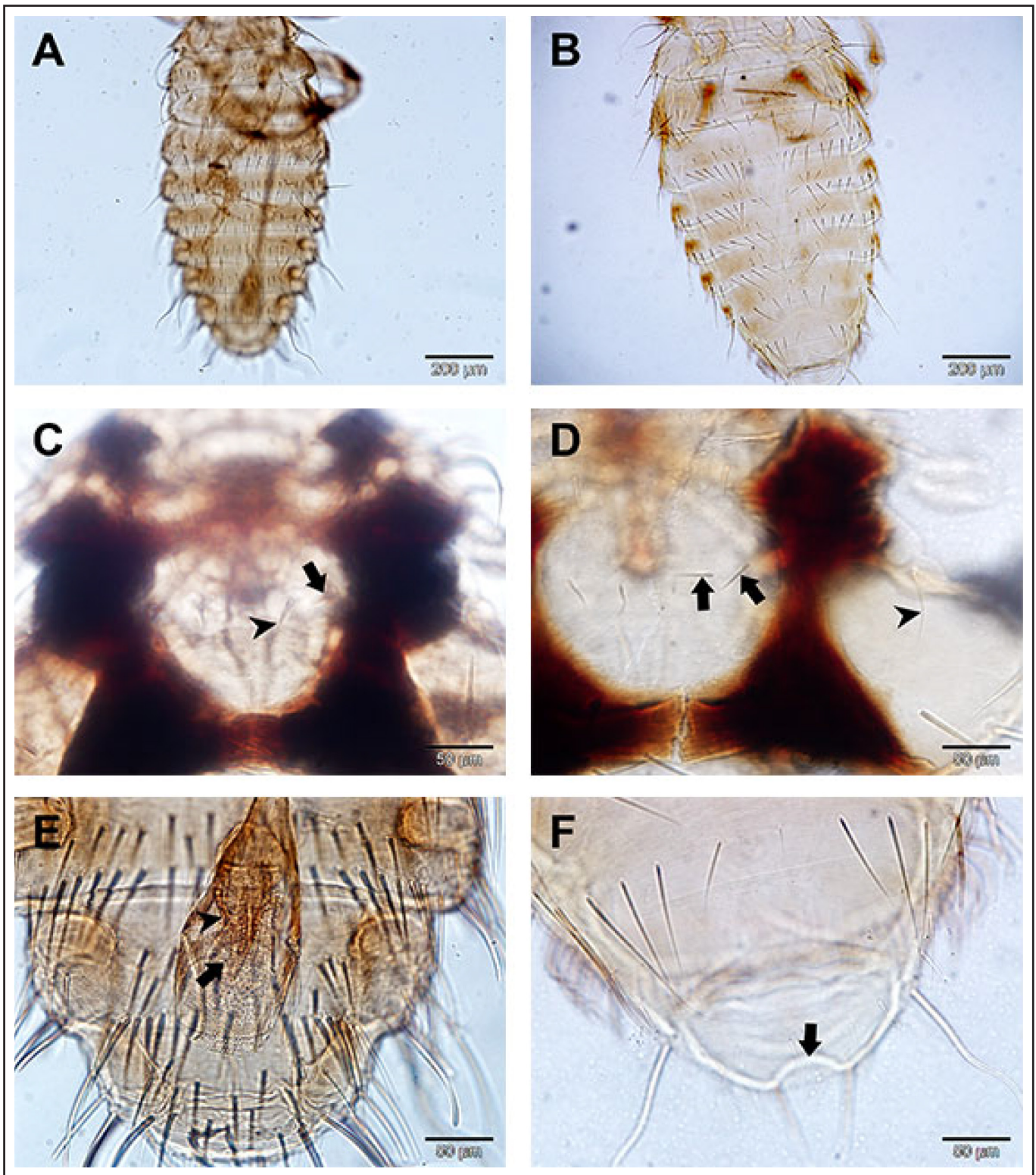


Figure 2. *Colpocephalum apivorus* male (A, C, E) and female (B, D, F). **A.** Dorsal view of male abdomen. **B.** Dorsal view of the female abdomen. **C.** Male head. Arrow shows the outer mid-dorsal head seta, and arrowhead shows the inner seta. **D.** Female head. Arrows indicate the mid-dorsal setae, and arrowhead shows the post-ocular seta. **E.** Male genitalia. Arrow shows the lateral barb of the penis, and arrowhead indicates absence of a posterolateral projection in the genital sclerite. **F.** Female anus. Arrow shows the dorsal indentation of the anus.

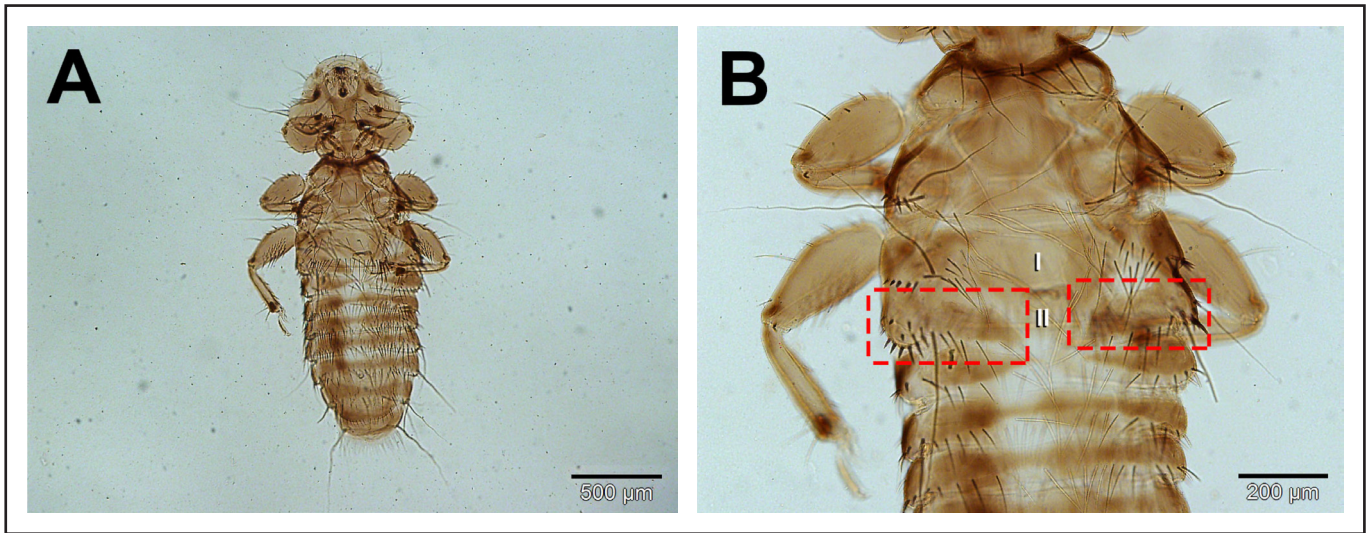


Figure 3. Adult female *Myrsidea splendenticola*. **A.** Habitus. **B.** Thorax and tergites I and II. Roman numerals indicate tergite numbers. Dashed boxes show the separation of tergite II due to the posterior extension of tergite I.

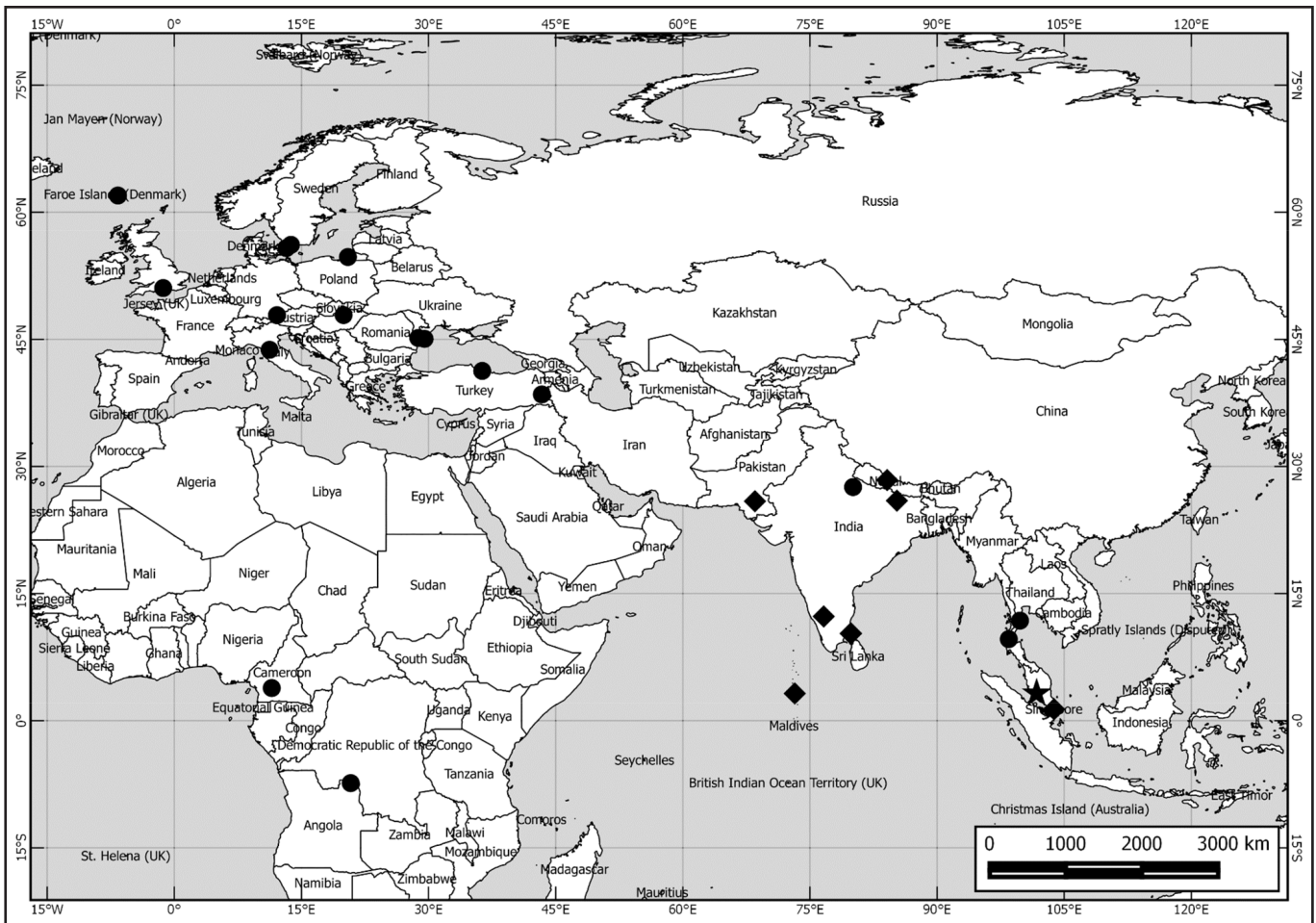


Figure 4. Geographical distribution of *Colpocephalum apivorus* and *Myrsidea splendenticola*. Filled circles and diamonds show confirmed localities for *C. apivorus* and *M. splendenticola*, respectively. Filled star indicates the new locality for both species in Peninsular Malaysia. Map is generated using the open source software: Quantum Geographical Information System (QGIS). World shapefile is downloaded from <https://www.efrainmaps.es>

(Clements et al., 2022). Hence, *M. borneoensis* may also be found in Malaysia.

Adrus et al. (2009) reported lice from the following wild birds in southeastern Sarawak: the Oriental dwarf kingfisher (*Ceyx erithaca*), the rufous-backed kingfisher (*C. rufidorsa*), the white-rumped sharma (*Copsychus malabaricus*), and the short-tailed babbler (*Pellorneum malaccense*). However, Adrus et al. (2009) gave neither the genus nor the species of the lice collected. Similarly, Azizi and Adrus (2019) recorded lice from three bird species: the emerald dove (*Chalcophaps indica*), the rufous-backed kingfisher and the crested partridge (*Rollulus rouloul*), but they did not identify the lice to species. They identified the crested partridge lice as *Goniodes* sp. and *Lipeurus* sp., and the lice collected from the rufous-backed kingfisher as *Philopteroides* sp. The latter record was considered dubious, because *Philopteroides* lice are not known to parasitise kingfishers (Valim & Palma, 2013). Adrus et al. (2009) and Azizi and Adrus (2019) are the only reports of bird lice from wild birds in Malaysia made by local researchers.

In conclusion, more research on lice from exotic pets and native species – particularly birds – is needed in both Peninsular Malaysia and Malaysian Borneo. Besides determining the actual geographical distribution of understudied species of lice, this research is important to curb the emergence of invasive, non-endemic parasites being introduced with their hosts into Malaysia. In addition to increasing knowledge of Malaysian biodiversity with the potential discovery of new species of lice from unexplored hosts, lice can also be a tool to assess evolutionary relationships among their hosts (e.g. Hughes et al., 2007) as well as their conservation status (e.g. Rózsa & Vas, 2015).

Declaration of competing interest

All authors report no competing interests.

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