Ectoparasites of Birds from a Rice Field in Samarahan Division, Sarawak

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ABSTRACT

Birds are easily infested with ectoparasites due to their fitness, foraging behaviour, nesting cavities, micro- and macro-habitats. However, the status of ectoparasite infestation on birds in Sarawak is widely unknown. Rice field provides food resources to a variety of birds. This study was conducted to determine the species composition of ectoparasites from birds in a rice field at Kuap Village, Samarahan, Sarawak. A total of 69 birds consists of five species were caught from the rice field and the most common bird species found was the Chestnut Munia (*Lonchura atricapilla*). From these, 55 were found infested with ectoparasites with the infestation prevalence of 79.71%. A total of 2,513 ectoparasites from eight species were recovered from this study which comprised of six species of mites, one species of soft tick, and one species from the class Insecta. The most dominant ectoparasite species was mite namely, *Nanopterodectes* sp. with a total of 1,626 individuals. This baseline data on the ectoparasite composition and infestation of birds is important as some of the ectoparasites have the potential in transmitting zoonotic diseases to the farmers working at the rice fields in this region.

Keywords: Avian, Chestnut Munia, ectoparasite infestation, paddy plantation, Malaysia

INTRODUCTION

Rice (*Oryza sativa*) is a staple food of Asians and represented 35% of the daily calorie intake of the people in Asia. The production of rice paddy and other correlated harvest activities have been a prominent economic sector and employed billion people in various Asian rural areas (Kevin, 2012). In Sarawak, there are vast varieties of rice with an average annual area of 125,923 ha of rice fields (Department of Agriculture Sarawak, 2016).

In Sarawak, there are 688 species of birds in which 61 are endemics to the state (Phillipps & Phillipps, 2013). Birds can be found in various types of vegetation such as mangrove, tropical forest and monoculture plantations, including rice fields. A study done by Nur Munira *et al.* (2014) recorded 5,120 individuals from 67 species of birds that were observed in the rice fields on the northern part of the Peninsular Malaysia. The bird families that were most commonly observed in the rice fields include Ardeidae (29.09%), Sturnidae (10.15%) and Hirundinidae (7.86%) (Nur Munira *et al*., 2014). Another study done by Makbul and Wong (2016) in Kota Belud Sabah showed that the most abundant species found in wet paddy fields were the Intermediate Egret (*Egretta intermedia*) and Black-winged Stilt (*Himantopus himantopus*). Besides, a recent study done by Nurqamareena, Chong, Mohd-Azlan and Ramji (2018) showed that birds from the family Estrildidae dominated a wet paddy field at Lundu, Sarawak. The diversity and abundances of birds were higher during non-growing periods in temperate zones in which migrant species are often found occupying the rice fields during the non-breeding season (Eadie, Elphick, Reinecke & Miller, 2008; Fujioka, Lee, Kurechi & Yoshida, 2010).

Birds harbored a great variety of ectoparasites which may cause negative effects to their fitness (Clayton, Koop, Harbison, Moyer & Bush, 2010). The common ectoparasites of birds include the biting lice (Mallophaga), fleas (Siphonaptera) and black flies (Simuliidae), hard ticks (Ixodidae), soft ticks (Argasidae) and certain mites (Wamiti, 2014). Ectoparasites are mostly blood suckers while others, such as Ischnocera lice and certain species of mites, subsist on skin components (Hopla, Durden & Keirans, 1994). A study by Cheke (1972) on birds at Cherangani montane forests in Kenya reported 30 bird species and their associated parasites. In Sarawak, the ectoparasite prevalence and intensity of birds were studied in Matang Wildlife Sanctuary and Gunung Gading National Park (Sodhi, 2002). The threatening status of birds is often correlated to the destruction of habitat as well as parasitism. Koop (2015) stated that bird extinction could be avoided if parasite infestation of bird is reduced by 40%. Albeit this fact, study on the ectoparasite infestation of birds is limited. Parasites however play a prominent role in an ecosystem by shaping the populations and communities of their hosts (Wood *et al*., 2007).