

Master of Science in Animal Ecology

Diversity and abundance of lice on Speckled Mousebird *Colius striatus* and Red-capped Lark *Calandrella cinerea* in two ecologically different habitats in central Kenya

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ABSTRACT

Parasites play an important role in ecosystems including shaping the populations and communities of their hosts. Majority of arthropod parasites transmit vector-borne zoonotic diseases, some of which are transmissible to humans and livestock. Birds are a host to a variety of arthropod parasites. Despite their importance, parasites continue being excluded in most ecological inventories. For example, the diversity of avian fauna in Kenya is fairly well known yet little is known about their ectoparasites. The aim of this study was to determine the diversity and abundance of lice of two endemic subspecies of birds, Speckled Mousebird *Colius striatus kikuyuensis* and Red-capped Lark *Calandrella cinerea williamsi* in two adjacent but ecologically different ecosystems: the cooler highlands of Nyandarua County and the warmer and lower altitude Naivasha area of Nakuru County. The two hosts were chosen because they are widely distributed in both study areas, exhibits varying behaviour and occupy specific niches. Lice were collected from 269 Speckled Mousebirds and 327 Red-capped Larks that were trapped using mist nets, and quantitatively examined using the dust-ruffling technique. A small amount of blood (c.100µl) was preserved as a dry spot from which DNA was extracted to determine the host's sex through PCR protocol targeting the CHD gene located on the avian sex (Z) chromosome. Two genera of lice, *Colilipeurus* sp. and *Colimenopon* sp., were recorded on Speckled Mousebird. Red-capped Lark had three lice genera: *Philopterus* sp., *Menacanthus* sp. and *Ricinus* sp., the first two being new host records. Louse distribution among hosts was aggregated (Poulin's discrepancy index D : Speckled Mousebird 0.571, Red-capped Lark 0.909). Louse prevalence was high in Speckled Mousebird (90%) compared to Red-capped Lark (17%). Prevalence between the host species was significantly different (unconditional exact test $p < 0.0001$). Louse intensity was significantly different among four age groups for both host species (Speckled Mousebird $H = 21.72$, $p < 0.0000$; Red-capped Lark: $H = 10.05$, $p = 0.017$). Intensity of louse infestation between sexes was not significantly different in both hosts species (Speckled Mousebird $U = 6288$, $p = 0.179$; Red-capped Lark: $U = 335.5$, $p = 0.359$). There was a weak inverse relationship between host's body mass and louse abundance though not statistically different (Speckled Mousebird: $\rho = -0.49$, $p = 0.4749$; Red-capped Lark: $\rho = -0.035$, $p = 0.61$). The two new host-parasite associations reported for Red-capped Lark suggest that there is more information not yet known about Kenyan avifauna parasites. The findings indicate that prevalence of lice is high in social species, such as Mousebirds, compared to the less social species like Red-capped Lark. This is probably because the parasite can spread fast due to regular body contact. The two hosts studied do not share lice although same genera were recorded at both habitats. Parasitic patterns, prevalence and intensity were different between lice genera, habitats and host species. It is therefore important that wildlife and livestock systems put into consideration the role of environmental factors, habitat features and behaviour of host species as these can have significant influence on parasite patterns.