

Bloodsucking Biting Midges - Neglected Threat For Wild Birds

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There are 1368 *Culicoides* biting midge species around the world [1] which can transmit more than 110 different arboviruses, bacteria, protozoa and helminths to humans and animals. However, because of their extremely small size, *Culicoides* remain the least studied of the major Dipteran vector groups [2]. *Haemoproteus* and *Trypanosoma* are just a small part of parasites, which can be transmitted by *Culicoides* biting midges to vertebrates. Wild animals, especially wild birds and their blood pathogens are studied less despite reports that parasites of some species can be pathogenic and affect the development and behavior of heavily infected individuals [3]. Avian trypanosomes have some interesting biological properties: they are cosmopolitan in distribution, extremely diverse and infect vertebrates with unique biology – the ones that can regularly migrate between different continents [4], so research on avian trypanosomes can help to explain the parasite distribution patterns. Nevertheless, the biology of avian trypanosomes (especially their life cycles in vectors – *Culicoides* biting midges) is still relatively little studied and vectors of only a few avian *Trypanosoma* species have been determined so far.

The purpose of this study was to determine *Culicoides* diversity and their infection with bird blood pathogens belonging to the family Trypanosomatidae. We collected parous biting midge females using UV light traps in four different study sites from May till September, 2022. Insects were identified to species level, molecular methods and microscopy were applied to estimate the natural trypanosomatid infections.

Both dixenous (*Trypanosoma*) and monoxenous (*Crithidia* sp. and *Herpetomonas zitiplika* – trypanosomatids infecting only insects) were found in nine different *Culicoides* species. The prevalence of trypanosomatid parasites in biting midges was 4.1 %. Detected trypanosomes – *Trypanosoma avium* and *T. bennetti* group – both are known to be bird blood parasites, mostly known from raptor birds. Interestingly, *T. avium* was found only in *C. segnis* biting midges; these insects are ornithophilic bloodsucking ectoparasites which might be potential avian trypanosome vectors in the wild. Other biting midge species – *C. punctatus*, *C. pictipennis*, *C. obsoletus* group, *C. kibunensis*, *C. impunctatus*, *C. festivipennis* – individuals were also found to be infected with trypanosomatid parasites.

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