

AVIAN TRYPANOSOMES (*TRYPANOSOMA*) IN BLOODSUCKING BITING MIDGES (CERATOPOGONIDAE)

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Protozoa of the genus *Trypanosoma* (Sarcomastigophora, Kinetoplastida) causes Chagas disease and African sleeping sickness in humans. Trypanosomiasis is not as well studied in birds, but the parasite does affect the growth and fitness of highly infected individuals [1]. More than 100 species of avian trypanosomes have been described and prevalence of these parasites in avian populations is close to 30 %, however most species biology and life cycles are unknown. Vectors of avian trypanosomes are bloodsucking insects, mostly from order Diptera – blackflies, biting midges and mosquitoes, but most vectors remain unknown [2-3]. Nowadays flagellates from genus *Trypanosoma* became one of the main objects in bird studies because of their ecological and evolutionary importance [4].

The main purpose of this study was to investigate trypanosome infections in biting midges (Ceratopogonidae, *Culicoides*). Goals of the study were: to collect parous biting midges for research in wild; to screen biting midges for natural trypanosome infections; to determine if two *Trypanosoma* species naturally found in Lithuanian birds can develop in *Culicoides nubeculosus* and *C. impunctatus* biting midges under laboratory conditions.

Biting midges were collected using UV light trap in Verkiai regional park in 2018 - 2019. Parous females were screened for the presence of *Trypanosoma* using molecular methods (PCR, DNA sequencing and sequence analysis). Birds naturally infected with *Trypanosoma* parasites were collected in Ventės Ragas and Labanoras. *Culicoides nubeculosus* (from the colony cultivated in laboratory) and *C. impunctatus* (wild) biting midges were allowed to feed on infected bird blood, were kept in laboratory, dissected daily and screened for the presence of *Trypanosoma* parasites using microscopy and PCR-based methods. Investigations were carried out at Nature Research Centre, laboratories of Entomology and P. B. Šivickis parasitology.

During research 235 parous wild caught biting midges (*Culicoides*) were investigated. Two *Trypanosoma* species and 2 species of related to trypanosomes flagellate parasites were detected in 16 biting midges belonging to 10 species. Experimental infections of *C. impunctatus* and *C. nubeculosus* biting midges with 2 species of trypanosomes (*Trypanosoma avium* and *T. everetti*) showed, that *T. everetti* can develop in *C. nubeculosus* and *C. impunctatus*. These parasites were detected in biting midges up to 9 days after feeding with infected blood. Only one out of 8 blood fed *C. impunctatus* biting midge was found to be infected with *T. avium*. There is not enough evidence that *T. avium* can develop in *C. impunctatus* under laboratory conditions and further investigation is needed.

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