



Conference Abstract

Preliminary results on species composition of the biting midges-fauna (*Culicoides*) in a wetland on Lower Danube Flow, Bulgaria

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Abstract

Biting midges of the genus *Culicoides* Latreille, 1809 (Diptera: Ceratopogonidae) are competent vectors of various pathogens in Europe with veterinary importance such as: Bluetongue virus, Schmallenberg virus, Epizootic hemorrhagic disease virus and avian haemosporidians. In order to reveal the potential role that they may play in spreading diseases in wildlife and thus the impact on ecosystems which they render, a reliable estimation of their faunistic diversity is required. Previous surveys conducted in the region of Kalimok Biological Station – a wetland on Lower Danube flow – were focused mainly on the ornithophilic species acting as vectors of avian haemosporidians, and thus leaving out the whole *Culicoides* diversity in the area underestimated (Bobeva et al. 2013, Bobeva et al. 2014, Bobeva et al. 2015). In the present study, we combined morphological and molecular approaches for species identification of the biting midges collected in the region of the field station in 2011, 2012, 2013 and 2018 years. Out of the 37 *Culicoides* species reported previously as national fauna (Nedelchev 2013, Pudar et al. 2018), we recorded 13 species in the studied area. In addition, three species namely, *Culicoides duddingstoni*, *C. griseidorsum* and *C. kibunensis* were newly recorded for the Bulgarian fauna, which raises the number of species of national fauna to 40. Interesting specimens affiliated to *C. pseudopallidus* have been collected in Kalimok. This latter species has not been reported

in Central and Eastern Europe so far and therefore further attention is required prior being considered as a new record. Regarding the potential vectors of avian haemosporidians in the studied area, the present investigation raised the list of species suspected for spreading this disease in wildlife from three to six, namely: *C. alazanicus*, *C. circumscriptus*, *C. duddingstoni*, *C. griseidorsum*, *C. kibunensis* and *C. pictipennis*. The current study of the biting midges' biodiversity improved the knowledge about the Bulgarian *Culicoides* fauna including the list of the potential vector species of avian malaria. However, faunistic studies on *Culicoides* in Europe remain sparse and such data serves as a basic knowledge for a better understanding of the *Culicoides*-borne diseases.

Keywords

biodiversity, *Culicoides* biting midges, vectors

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References

- Bobeva A, Zehtindjiev P, Bensch S, Radrova J (2013) A survey of biting midges of the genus *Culicoides* Latreille, 1809 (Diptera: Ceratopogonidae) in NE Bulgaria, with respect to transmission of avian haemosporidians. *Acta Parasitologica* 58 (4). <https://doi.org/10.2478/s11686-013-0185-z>
- Bobeva A, Ilieva M, Dimitrov D, Zehtindjiev P (2014) Degree of associations among vectors of the genus *Culicoides* (Diptera: Ceratopogonidae) and host bird species with respect to haemosporidian parasites in NE Bulgaria. *Parasitology Research* 113 (12): 4505-4511. <https://doi.org/10.1007/s00436-014-4140-1>
- Bobeva A, Zehtindjiev P, Ilieva M, Dimitrov D, Mathis A, Bensch S (2015) Host preferences of ornithophilic biting midges of the genus *Culicoides* in the Eastern Balkans. *Medical and Veterinary Entomology* 29 (3): 290-296. <https://doi.org/10.1111/mve.12108>
- Nedelchev N (2013) Kulikoidite v Balgaria. [*Culicoides* from Bulgaria]. *Network Technology Solutions*
- Pudar D, Petrić D, Allène X, Alten B, Ayhan N, Cvetkovikj A, Garros C, Goletić T, Gunay F, Hlavackova K, Čupina AI, Kavran M, Lestinova T, Mathieu B, Mikov O, Pajović I, Rakotoarivony I, Stefanovska J, Vaselek S, Zuko A, Balenghien T (2018) An update of the *Culicoides* (Diptera: Ceratopogonidae) checklist for the Balkans. *Parasites & Vectors* 11 (1). <https://doi.org/10.1186/s13071-018-3051-x>