

OPINION

on a dissertation for awarding the scientific and educational degree "Doctor" in the scientific specialty "Ecology"

to **Antoniya Yurieva Hubancheva**, full-time doctoral student at IBER-BAS with the topic "Sound Based Predator-Prey Interactions Between European Bats and Bush-Crickets",

by Prof. Dr. **Dragan Petrov Chobanov**,
Institute of Biodiversity and Ecosystem Research - BAS,
scientific supervisor of the doctoral student and member of the scientific jury

This statement was prepared in connection with the order of the director of IBER-BAS No. 76/06.10.2023 and is in accordance with the requirements of the Regulations on the terms and conditions for acquiring scientific degrees and for the occupation of academic positions at the Institute of Biodiversity and Ecosystem Research at BAS.

Biographical data

Antoniya Hubancheva graduated with a Master's degree in "Ecology and Environmental Protection" at the Faculty of Biology of SU "St. Kliment Ohridski" with an average grade in the exams "Very good" and with a grade in the diploma thesis "Excellent" in 2011. M.Sc. Hubancheva has been enrolled as a full-time doctoral student in the specialty "Ecology" at IBER-BAS since 01.02.2017. The doctoral student was dismissed with the right to defense on 01.20.2021 and her dissertation is aimed at defense by decision of the Scientific Council of IBER from 29.09.2023.

Dissertation work and personal qualities of the doctoral student

After successfully passing the full-time doctoral competition exams, Antoniya Hubancheva was enrolled as a full-time doctoral student, and Dr. Holger R. Goerlitz and I were appointed as supervisors. The PhD student had already accumulated considerable experience in research on the distribution, ecology and behavior of bats, as well as in field research work within Bulgaria and abroad. Therefore, the developed individual plan was ambitious in terms of the foreseen multidisciplinary research and experiments, which aimed to

study the sound interactions between the greater and lesser mouse-eared bats (*Myotis myotis* and *Myotis blythii*) and their victims – the bush-crickets of the family Tettigonidae. The research included elucidating the diet of the two bat species through DNA metabarcoding; tracking the movements and the feeding behavior of the greater mouse-eared bat using miniaturized acoustic sensors; investigating the predator avoidance strategies of the bush-crickets while attracting mates.

The significant complexity of the subject of the doctorate and the complex time-consuming experiments placed high demands on the doctoral student in terms of theoretical and practical training. In the process of the research, M.Sc. Hubancheva also encountered a number of difficulties beyond her control, as well as the need to solve theoretical and practical questions regarding the conduct of the experiments and the analysis of the results. Some of these difficulties necessitated a delay in the research, but, in my opinion, the PhD student displayed remarkable focus and persistence, which helped her to achieve the excellent results presented in the dissertation.

I have known Antoniya Hubancheva since her student years and I have an impression of her as an energetic, inquisitive, persistent and self-giving researcher. This gave me the reason to take the co-leadership of such an ambitious project. In the course of her doctoral studies, M.Sc. Hubancheva showed excellent qualities for learning, modifying and applying various field and analytical methods, for theoretical self-training, as well as for analyzing and presenting the results of her work at scientific forums and in publications. Last but not least, Hubancheva is also a very communicative and easy-going person, who without difficulty endured several seasons of intensive several-months fieldwork at the field station in the village of Tabachka, where she managed the station and trained her younger colleagues from the Max-Planck Institute.

Antoniya Hubancheva is the author of six publications and one finished manuscript, of which two publications for the dissertation, published in renowned journals, referenced in the Web of Science and/or Scopus databases. The PhD student has participated in numerous scientific forums, including as an invited speaker, and is the beneficiary of various grants and awards.

Conclusion

I believe that the dissertation contains original contributions and has been prepared in accordance with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria, as well as with the rules of the IBER-BAS. The completed complex

scientific work on the dissertation and the prepared thesis, which I can claim is the personal work of the doctoral student, show the growth of Antoniya Hubancheva as an accomplished scientist with the potential to develop a successful scientific career. In connection with what has been stated so far, I strongly support the awarding of the scientific and educational degree "Doctor" in the scientific specialty "Ecology" to Antoniya Yurieva Hubancheva.

Sofia, 22.11.2023

prof . Dr. Dragan Petrov Chobanov