OPINION

by Prof. Dr. Yordan Ivanov UZUNOV,
Member of the Scientific Jury, appointed by Order No. 17/14.02.2025
of the Director of IBEI-BAS, for the defense of the PhD dissertation

"CURRENT CHARACTERISTICS OF THE STATUS OF AQUATIC OLIGOCHAETES AND ASSESSMENT OF THE INVASIVE POTENTIAL OF BRANCHIURA SOWERBYI BEDDARD, 1892 IN BULGARIAN SURFACE WATER BODIES",

as presented by the full-time PhD student Galya Nikolaeva Georgieva-Mladenova
for the award of the ESD "Doctor" in the scientific specialty Hydrobiology (01.06.11),
professional field: 4.3. "Biological Sciences"

Doctoral student Galya Georgieva graduated from the National School of Natural-Mathematical Sciences in Sofia in 2000, after which she studied "Computer Systems and Technologies in Medicine" at the New Bulgarian University (2004), and then simultaneously enrolled at the Biological Faculty of the Sofia University, where she graduated as a Bachelor (Biology) in 2010. She received a Master's degree in "Ecological Biotechnologies" with a thesis entitled "Ecological State of the Iskar River in the Area of the "Middle Iskar Cascade" as based on the macrozoobenthic communities", which she defended in the Department of "Applied Hydrobiology and Aquaculture" in 2011.

The doctoral student was enrolled in 2012 in a regular PhD program at the Department of Aquatic Ecosystems of the Institute of Biodiversity and Ecology of the Bulgarian Academy of Sciences (IBER -BAS) with the topic "*Distribution and invasive potential of the aquatic oligochaete Branchiura sowerbyi Beddard, 1892 in Bulgarian surface water bodies*". Subsequently, the title was expanded and changed by a decision of the Scientific Council of the IBER BAS to "*Current characterization of the status of aquatic oligochaetes and assessment of the invasive potential of Branchiura sowerbyi Beddard, 1892 in Bulgarian surface water bodies*". With this title, she was enrolled with the right to defend her dissertation paper on 01.01.2017. Lastly, the Collegium of the Aquatic Ecosystems Department at IBER-BAS discussed the results obtained and decided to approach the dissertation to a defense procedure on 17 January 2025.

After her discharge in 2017, she continued to actively work on her dissertation, continuing to accumulate new samples and data on the distribution of aquatic oligochaete species, especially in stagnant water bodies (376 collections from 95 stagnant water bodies, including dams) and 555 samples from 167 river stations in 26 river basins. In total 267 new localities of aquatic oligochaete species were identified, including rare or once-reported species.
As a result of the processing of this considerable amount of new data, new localities of common and rare species of aquatic oligochaetes have been confirmed and/or indicated in our country,

including a new species for the Bulgarian freshwater fauna. The doctoral student had a desire to summarize the accumulated data and "open" them to other users and/or collaborators through the means of information technologies; thus, the database was developed, filled with up-to-date information on the localities of oligochaete species, attributes of their location (geo-coordinates, physical and chemical conditions of the aquatic environment, incl. bottom substrate, water body types according to the official state nomenclature...), distribution maps, etc.

The presented dissertation is developed on 342 pages, of which 199 are the main text with content organized according to the classic chapters/sections as Introduction, Literature review, Aims & Objectives, Materials & Methods, Results & Discussions, etc., and the PhD student has also formulated her own contributions. The dissertation also contains well-developed illustrative materials, presented through 60 figures and 19 tables. The list of used literature includes 239 titles, of which 22 are in Cyrillic, and the rest in Latin.

Within the framework of the doctoral studies, her individual plan has been fully implemented, exams in the scientific specialty, in computer training, in English language and two mandatory elective courses have been successfully passed. The achieved results have been granted with 334 credit points, which significantly exceed the legally required 250 credits. 3 publications have been presented on the topic of the dissertation, all three of which are directly related to the results of the research conducted.

In summary, the main results and contributions are as follows:

- New data on the composition and distribution of oligochaetes from our freshwater bodies/objects have been accumulated, with 267 new localities being studied, especially in poorly studied standing water bodies (95 points), as well as from 167 points of our river network; up-to-date maps of the distribution of species from the subclass Oligochaeta in Bulgaria have been prepared;
- In total 88 oligochaete species have been found, including a new one for the Bulgarian freshwater fauna, and the data have been entered into a specially developed database containing attributive information about the individual species and the environmental conditions at the location, allowing for storage, information management and retrieval of references for the Bulgarian oligochaete fauna;
- The distribution of the potentially invasive species *B. sowerbyi* in Bulgaria was studied, and for the first time a procedure for parallel assessment of the invasive potential and invasive risk was carried out using two methodologies.

During the development of the dissertation paper, in addition to fulfilling her immediate tasks on it, G. Georgieva was engaged in active activity, and as a journal biologist-hydrobiologist in a whole series of 23 projects of the department, where she worked dedicatedly and competently, mastering new and new methodologies, techniques, literary sources. During this time, she has 34 participations in Bulgarian and international scientific forums and published 25 scientific articles, some of which are referenced in Scopus and Web of science, in 12 of which she is the first author. She modestly did not note, for example, her participation in our considerable team of collaborators in a large pan-European article in NATURE from 2023. It should be specially emphasized that the doctoral student Galya Georgieva is an extremely responsive, inquisitive, hardworking, conscientious and very responsible worker, a first-class collaborator.

Conclusion: The dissertation paper presented by the doctoral student Galya Nikolaeva Georgieva-Mladenova on the topic “Current characterization of the state of aquatic oligochaetes and assessment of the invasive potential of *Branchiura sowerbyi* Beddard, 1892 in Bulgarian surface water bodies” fully meets the requirements for awarding the ESD “Doctor” (PhD) in Hydrobiology with its relevance, comprehensiveness, pioneering nature and proven statistical presentation of the results.

I strongly urge the esteemed Scientific Jury to vote **FOR** awarding the PhD degree to doctoral student Galya Nikolaeva Georgieva-Mladenova.

Sofia, May 08 2025

Prof. Dr Yordan UZUNOV,

Member of the Scientific Jury