

## OPINION ON DISSERTATION WORK

Opinion on the dissertation work of **Pencho Danchev Ivanov** on the topic "**Structure and Functions of Hydrozoocenoses in Temporarily Drying Water Bodies**", receiving the educational and scientific degree "Doctor" in the scientific specialty Hydrobiology (code 01.06.11)

**Opinion prepared by: Assoc. Dr. Lachezar Pehlivanov** is a member of the Scientific Jury and the Scientific Supervisor of the doctoral student.

### **Biographical data for the PhD student:**

Pencho Danchev Ivanov was born on August 15, 1968 in Sofia. In 1988, he was accepted as a full-time student at the Faculty of Biology of "St. Kl. Ohridski", where he completed his studies in 1994 with a Master's in the Department of Ecology and Environmental Protection. He has defended a master's thesis on "Structure of The Spatial Distribution of The Zooplankton – Eating Perch /Perca Fluviatilis L./ in a Predator-Prey System". Pencho Ivanov was enrolled by Order No. 310/27.12.2012 as a part-time doctoral student in professional direction 4.3. Biological Sciences, Specialty Hydrobiology (01.06.11) at the Department "Aquatic Ecosystems" with a term of 4 years, starting from 01.01.2013. Assoc. Ph.D. Lachezar Pehlivanov has been appointed as a scientific supervisor. In 2018, he was dismissed with the right of defense of a doctoral dissertation.

During the training process, Pencho Ivanov participated in a project part of the institute's research plan on "Evaluation of the Ecological Status of the Aldomirovo Marsh and Preparation of a Fish Stocking Plan." The Municipality of Slivnitsa and the Ministry of Education and Culture finance the project. He participated in the implementation of individual tasks and other projects. He has conducted several studies tracking the dynamics of hydrozoocenoses in various types of surface water (mainly stagnant).

### **Area of Scientific Interest**

Pencho Ivanov's scientific interests include studying, protecting, and managing aquatic ecosystems. He also has interests in theoretical biology, evolutionary biology, and behavioral processes and patterns.

### **Demonstrated Qualities in the Development of the Dissertation Topic**

The dissertation summarizes the results of long-term research related to the implementation of intensive field and laboratory work and an in-depth study of a large volume of specialized literature. In the work process, Pencho Ivanov showed a creative approach and independence in carrying out the assigned tasks, excellent workability, and in-depth analytical thinking in analyzing the information from the literature and interpreting the obtained results. He successfully used the educational component of his doctoral studies, mastering and successfully applying a wide range of classical and modern methodological approaches to data analysis, including specialized biological, chemical, hydrological, and statistical methods.

Thanks to his demonstrated personal and professional qualities, in addition to implementing his doctoral program, he participated in research teams implementing scientific research and scientific applied projects funded by various institutions. This allowed him to improve his methodical skills and collect a significant volume of material for his dissertation. While participating in these projects, he efficiently cooperated with colleagues from other Bulgarian scientific organizations and prominent scientists from various European countries.

My direct impressions of the dissertation development give me a reason to assert that it is undoubtedly a personal work of Pencho Ivanov.

During his studies, he has collected 350 credits – more than 100 compared to the minimum of 250.

### **Major Scientific Contributions**

The first study for Bulgaria and the region of the structural and functional characteristics of animal communities in various temporarily drying water bodies was carried out, a detailed description of the stages of settlement and the process of structuring the communities of aquatic invertebrates in drying pools after their filling with water, described and the role of the irrigation regime, the dynamics of the water volume and the water residence time (hydroperiod) for the formation of the composition and structure of hydrozoocenoses in temporarily drying water bodies was analyzed, the limiting factors for the development of hydrozoocenoses in temporarily drying water bodies were identified and evaluated bodies under different hydrological regimes, qualitative models of food webs in hydrozoocenoses were developed and a comparative analysis of their structure was made in various types of temporarily drying water bodies, new information was obtained regarding the influence of partial drying on aquatic invertebrate communities in the lower reaches of small Black Sea rivers. For the first time, it was established that in partially

drying small Black Sea rivers, the reduction of the water outflow, the stoppage of the water flow, and the fragmentation of the flow do not have a significant impact on the formation and functioning of the MZB community, but favor the development of the zooplankton community.

### **Publishing Activity**

Pencho Ivanov is co-author (including first author) of three scientific publications, the results of which are included in the dissertation. These include one article in an international journal with an impact factor (Q3) and two full-text papers in international scientific conference proceedings.

### **Conclusion**

During the dissertation development, Pencho Ivanov showed the qualities of a motivated, competent, and responsible researcher with broad scientific interests and awareness, high workability and systematic approach to field research, thorough data analysis, and correct interpretation of the results.

The scientific and scientific-applied contributions made by Pencho Ivanov during his dissertation work characterize him as a researcher with broad methodological training and in-depth knowledge of a wide range of issues related to the structure of freshwater invertebrate communities.

This gives me a reason to confidently recommend to the esteemed members of the Scientific Jury, elected by the National Assembly of IBEI, that Pencho Danchev Ivanov be awarded the ONS "Doctor."

5<sup>th</sup> of April, 2024

Opinion Preparer: \_\_\_\_\_  
/Assoc. Dr. Lachezar Pehlivanov/