

STATEMENT OF OPINION

by Detelina Stoyanova Belkinova PhD,

Associate Professor at the

Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences,

Regarding the Thesis for the Acquisition of PhD Academic Degree in the

Field of Higher Education: 4. Natural Sciences, Mathematics and Informatics;

Professional Direction: 4.3. Biological Sciences (**Hydrobiology**)

Title: *Study on Benthic Diatom Assemblages in Intermittent Rivers in Southern Bulgaria and Their Application for Assessment of Ecological Status.*

PhD Candidate: Tsvetelina Yasenova Isheva,

Scientific Supervisor: Prof. Yordan Uzunov PhD

Scientific Consultant: Senior Assistant Plamen Ivanov PhD

By Order No. 26/5 March 2024 of the Director of IBER-BAS, I have been appointed as a member of the scientific jury to provide a procedure for the defense of this thesis for the acquisition of PhD Academic Degree. The set of materials submitted by the candidate for the procedure is in accordance with Article 7 of the Regulations on the Conditions and Procedures for the Acquisition of Academic Degrees and for the Occupation of Academic Positions at the Institute of Biodiversity and Ecosystem Research at BAS, and includes a complete set of documents.

The PhD thesis of Tsvetelina Isheva, full-time PhD candidate, is devoted to diatom communities in intermittent rivers and their application for ecological water quality assessment. The topicality of the subject is dictated by the poorly studied status of intermittent rivers worldwide and the predictions that their number will increase in the future.

In this thesis, for the first time in Bulgaria, detailed and comprehensive study was done of the diatom assemblages in intermittent rivers in Southern Bulgaria, which belong to the national type R14 (Sub-Mediterranean small and medium rivers). The taxonomic composition of the species, the relative abundance of their populations, the dominant structure, and the seasonal

succession of assemblages, at two hydrological periods were determined. Three structural indices of diatom communities were calculated. The complex nature of the study is complemented by the determination of ecological spectra of the identified species to seven environmental factors and the analysis of the following biological characteristics: size structure, life forms and functional groups, with relevance to the hydrology and ecological status of the studied rivers.

A substantial and significant part of the results of scientific and applied nature concerns the development and updating of a type-specific classification system for river type R14 according to the Diatom Index IPS. An ecological assessment and comparison of the ecological status of the studied rivers was made. The methodology is recognised and officially included as relevant for the assessment of the ecological status under the BQE Phytobenthos in the European and Bulgarian water legislation.

The literature review is well structured and shows excellent knowledge of the issues. A large number of literature sources (310), of which almost half are recent studies published after 2010, are skilfully cited in the review and in the interpretation of the results.

The aim and objectives of the thesis are clearly and concretely formulated. The obtained results are well illustrated and have the necessary level of reliability due to the application of a number of correlation analyses. The conclusions present the synthesized results obtained on the set objectives. The most significant scientific contributions I can point out are the original contributions of floristic nature, which enrich the knowledge of the Bulgarian algae flora in intermittent rivers with precise taxonomic lists, the new species recorded for Bulgaria and one for Europe, the identified rare species and of such with conservation status. Among the contributions of scientific and applied nature, the development and updating of a classification system and methodology for assessing the ecological status of the BQE Phytobenthos for river type R14 is of important practical importance for national monitoring.

Some of the results of the thesis are reflected in 2 publications in which the candidate is the lead author, including one publication in the journal *Comptes Rendus de l'Academie Bulgare des Sciences* (IF:0.378; SJR_{Q2}:0.244) and a publication in the international journal *Botanica Serbica* (SJR_{Q3}:0.265). These have found an international response and have had ten citations so far.

The abstract has been prepared as required and correctly reflects the essence and results of the thesis.

The mentioned significant results and their original character leave no doubt that full-time PhD candidate Tsvetelina Isheva is an established specialist in the field of diatom assemblages, possesses in-depth theoretical knowledge and the ability for independent scientific research. An excellent attestation of her expertise is the fact that she has been included in the composition of two projects with international expert participation, dedicated to the intercalibration of analysis methods and the validation of the classification system and national typology.

CONCLUSION

Tsvetelina Isheva's thesis contains sufficient scientific and applied results, which represent an original contribution to science and legislation related to water. There is compliance with all the requirements of the Academic Staff Development Act in the Republic of Bulgaria (ASDA) and its implementing regulations.

The presented data and facts give me the grounds to evaluate POSITIVELY the developed thesis and to propose convincingly to the Scientific Jury to award the PhD degree to Tsvetelina Yassenova Isheva in the field of higher education: 4. Natural Sciences, Mathematics and Informatics, Professional Direction: 4.3. Biological Sciences (Hydrobiology).

Sofia

30 May 2024

The Statement of Opinion was prepared by:

/Assoc. Prof. Detelina Belkinova PhD/