

## OPINION

by Assoc. Prof. Dr. Kremena Blagovestova Stefanova

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Member of the Scientific Jury appointed by Order No. 41 of 05/27/2024. of the Director of IBER-BAS, Sofia, on a competition for the selection of a Professor in Professional field 4.3 "Biological Sciences", scientific specialty "Hydrobiology", for the needs of the research group "Bioindicators, monitoring and ecological classification of freshwater ecosystems" at the Department "Aquatic ecosystems" of IBER - BAS", announced in SG no . 27/29.03.2024 , ( p . 48 ) .

In the competition for the academic position of "Professor" in Professional field 4.3 "Biological Sciences", scientific specialty "Hydrobiology", for the needs of the research group "Bioindicators, monitoring and ecological classification of freshwater ecosystems" at the Department "Aquatic Ecosystems" of IBER - BAS" one candidate participated - Associate Professor Emilia Dobrinova Varadinova. Dr. Varadinova successfully combines research, teaching, and expert activities at the Institute of Biodiversity and Ecosystem Research, BAS, SWU Neofit Rilski, Blagoevgrad (holder of academic disciplines), UP Paisii Hilendarski Plovdiv (part-time lecturer) and University of Forestry (guest lecturer). She has over 30 years of experience in various aspects of fundamental and applied ecology and hydrobiology.

An extremely important and key point in evaluating the scientific output of Assoc. prof. Varadinova is the identified contributions that have not only fundamental but also applied significance. These contributions grouped are into four main areas of research such as:

- Biodiversity of macrozoobenthos in surface continental waters
- Bioindication and assessment of ecological status
- Methodology of biological water monitoring
- Preservation of biodiversity and the ecological condition of water bodies and wetlands

One of the highlights of the candidate's research is the taxonomic composition and structure of the macrozoobenthos in different types of rivers, lakes, and reservoirs located in Bulgaria. It is important to emphasize the personal contribution to the identification of taxa/species in the order Trichoptera, class Turbellaria, subclass Hirudinea, and the orders Coleoptera, Odonata, Hemiptera, Megaloptera and Diptera (excluding the family Chironomidae), as well as the identification of taxa in the subclass Oligochaeta and the orders Ephemeroptera and Plecoptera to genus/family level. I would like to highlight the comprehensive study conducted in 51 of the largest standing reservoirs (lakes and dams) in the country, where the taxonomic composition of the macrozoobenthos was established. A large-scale national survey was carried out in 139 river and 79 lake points representative of all types of standing and flowing water bodies identified in the country. Up-to-date species lists of aquatic

invertebrates were prepared for all studied monitoring stations. It was established that species-factor interactions reflect the complex action of abiotic parameters in connection with registered anthropogenic pressure. The trophic structure of the macrozoobenthos in larger lakes and reservoirs in Bulgaria was studied and analyzed, proving that the dynamics of functional trophic groups in lentic ecosystems reflect their dominance and importance in different water bodies (natural, artificial, and highly modified). At the same time, the analysis of the relationships of the functional groups with the physical and chemical parameters of the water environment shows that altitude, shading, and anthropogenic impact are key factors in the formation of the trophic structure of bottom invertebrate communities.

The contributions of an original nature related to the assessment of the bioindicative potential of the macrozoobenthos in lotic and lentic ecosystems are indisputable. Through the application of three indices (total number of taxa, biotic index and trophic index) based on the macrozoobenthos, the ecological status of 11 lakes and 39 dams, which belong to 15 types of standing water bodies in Bulgaria, was determined. Another significant contribution regards the application of a site-specific approach, where depending on the salinity of the water in the studied points, relevant metrics are applied for the assessment of fresh and salty/hypersaline waters in Lake Atanasovsko, with the aim of developing measures for its restoration and long-term preservation.

A biological classification of surface water bodies in the categories "river," "lake," and "transitional waters" in Bulgaria was made, as well as an assessment of the ecological status of all studied water bodies for a five-year period. The importance of this research and the obtained results is evidenced by their inclusion in the River Basin Management Plan (RBMP) (2022-2027) of the Basin Directorates in Bulgaria. Of particular interest is the comparison of classification systems for assessing the state of surface waters between countries located in different ecoregions in Europe (Bulgaria and Ireland) and on different continents (Europe and Asia). The study proves that regardless of the specific geographical characteristics and applied indices, correct comparability of the obtained estimates is observed, due to the fact that they are based on similar evaluative, science-based approaches.

Undoubtedly, a significant applied achievement is not only the development but also the revision of the ecological quality thresholds of the type-specific scales of the Biotic Index based on macrozoobenthos. The assessment scales were published in the latest amendment to Ordinance H-4/2012 on the characterization of surface waters (SG 67/04.08.2023), which emphasizes the importance of the expert work of Assoc. Prof. Varadinova

The documents submitted by the candidate not only fully meet the requirements for occupying the academic position of "Professor" under the Act on Development of the Academic Staff in the Republic of Bulgaria (ADASRB), but also exceed them in terms of the quantitative indicators of the criteria. For example, to the group of indicators "C" (Habilitation thesis - scientific publications in journals that are referenced and indexed in world-renowned databases with scientific information, such as Web of Science and Scopus), the minimum required points are 100, while the candidate reaches 130 points with 8 publications (Q1 – 2, Q2 - 1, Q4 – 5), in which she is the first author. A minor technical error has been made here, most likely inadvertently (one of the articles is presented with SJR instead of Q4). The other scientific publications in journals that are referenced and indexed in world-renowned databases of scientific information (Web of science and Scopus), falling into indicator group D7

(ADASRB) and book chapters /collective monographs (D8), include a total of 23 articles and 6 book chapters/collective monographs, also exceeding the minimum requirements by nearly twofold.

An important element in evaluating the quality of a scientist's work is their recognition in scientific and academic circles, as demonstrated by citations of their scientific output on both national and international scales. The report provided for this competition shows a total of 188 citations (excluding citations in theses, dissertations, and conference reports), of which 147 citations are in the two databases. The total number of points (294) achieved by the candidate according to this criterion exceeds more than twice the minimum requirement (120). The high percentage of citations in international scientific journals is an indisputable fact.

The participation and management of projects, the supervision of two successfully defended doctoral students, and the teaching activity are additional proofs of the candidate's expert skills.

**Conclusion.** The documents presented in the competition by Associate Professor Emilia Varadinova meet all the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations for the Implementation of the ADASRB and the relevant Regulations of IBER-BAS. The candidate's developments have original scientific and applied contributions that have received national and international recognition. Based on the above, I give my positive evaluation and recommend to the honorable members of the Scientific Jury to vote "positive" for awarding the academic position of "Professor" to Assoc. Prof. Dr. Emilia Dobrinova Varadinova in the Professional field 4.3 "Biological Sciences," scientific specialty "Hydrobiology," for the needs of the research group "Bioindicators Monitoring and Ecological Classification of Freshwater Ecosystems" at the "Aquatic Ecosystems" Department of IBER - BAS.

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Varna

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