

STANDPOINT

From: Assoc. Dr. Vencislav Kostadinov Karamfilov, IBEI-BAN

Member of the scientific jury, determined by order **41/27.05.2024r** . of the director of the Institute of Biodiversity and Ecosystem Studies - BAS for holding a competition for the academic position of "professor" in the professional field 4.3. "Biological sciences", scientific specialty "Hydrobiology" for the needs of the research group "Bioindicators, monitoring, ecological classification of freshwater ecosystems, section biodiversity and functioning of freshwater ecosystems" at the Department "Aquatic Ecosystems" of IBEI-BAS, Sofia, announced in SG No. 27/29/03/2024

Candidate: Associate Professor Emilia Dobrinova Varadinova, Ph.D

1. General data on the candidate's career and thematic development

In the period 1986 - 1991 , Emilia Varadinova completed a full course of study at the Faculty of Biology of SU "St. Kliment Ohridski" and obtained a master's degree with a specialization in "Biochemistry and Microbiology". Her career development continues consistently in the former Institute of Ecology - BAS, TsLOE - BAS, currently IBEI - BAS , as in 2006 she defended her doctorate degree at TsLOE-BAS in the Scientific specialty "Hydrobiology". In the period 2005-2023. she completed specializations at the University of Amsterdam, Netherlands, University of Dublin, Ireland, Spiru Haret University, Romania, as well as practical courses on various scientific and didactic projects in which she participated. Since 2014 is an associate professor at IBEI-BAS at the "Aquatic Ecosystems" department and since 2015 and at the Faculty of Natural Sciences, Department of Geography, Ecology and Environmental Protection, at Southwestern University "Neofit Rilski", Blagoevgrad, where he also develops teaching activities.

The main directions in the scientific subject of Assoc. Prof. Varadinova are research in the field of biodiversity, assessment of the state and management of water, training of doctoral students, graduates and specialists, leadership and participation in national and international scientific projects and related activities.

2. Presented materials for the competition

In the current competition, Assoc. Prof. Varadinova participated with 20 titles published in journals with an impact factor IF and 11 with SJR, distributed as Q 1-4, Q2-3, Q3-4 and Q4- 20 items, 6 chapters from a book or publications in a collective monograph, as well as two published reports in the proceedings of an international conference. A list containing 189 citations (predominantly in journals with IF and/or SJR) is presented after the competition for the academic position "associate professor" and at the time of the announcement of the current academic position "professor", which does not include citations in diploma theses, dissertations and reports from scientific forums. The scientific output and citations visible in the scientific databases (Scopus and WoS) bring the candidate a cumulative h- index of 6 in Scopus and 5 in WoS .

3. Scientific directions and contributions

I accept the self-assessment for the contributions summarized as a result of Assoc. Prof. Varadinova's long-term studies on the macrozoobenthos communities in different categories of freshwater surface water bodies, natural and influenced to varying degrees by human activity. Research covers analysis of biodiversity and community structure of aquatic invertebrates, use of macrozoobenthos for bioindication and assessment of the ecological status of water bodies. Highlights are:

➤ detailed study of the taxonomic composition and structure of the macrozoobenthic communities in different types of rivers, lakes and reservoirs in Bulgaria (Trevisto Lake and the reservoirs Ognyanovo, Bebreesh, Hristo Smirneniski, Yovkovtsi, Belmeken, Batak, Golyam Beglik and Shiroka Polyana) in relation to key factors of the aquatic environment, including various types of

pollution (papers No. 69, 74, 78, 79, 81, 84). In determining the composition of the macrozoobenthos, personal contribution was differentiated in the determination of species of the class *Turbellaria*, as well as the determination of species of the subclass *Oligochaeta* and the orders *Ephemeroptera* and *Plecoptera* to the genus/family level. A complete taxonomic list of the aquatic invertebrate fauna (No. 81) in the studied stagnant water bodies is presented. I consider the comparative analysis of the species structure of the macrozoobenthos in the Maritsa and Han rivers (South Korea) in work No. 85 to be a special contribution. The study is a basis for further comparative analyses of the influence of combined factors of a local and global nature, such as e.g. climate change.

➤ on the example of 15 reference and affected points from the Maritsa watershed to varying degrees, it was found that as a result of human impact there is a redistribution in the ratio of the main taxonomic groups, as the species sensitive to anthropogenic pressure are replaced by more plastic ones, which leads to the transformation of communities (papers no. 74, 79, 84). In this connection, the changes in the macrozoobenthos composition depending on the altitude as an integral indicator are also described.

➤ study of the state and opportunities for restoration of freshwater biodiversity in Europe (paper no. 82). As a result of accumulated arrays of data for the Mesta River, as well as for other Bulgarian and European rivers from the territory of 22 countries, the long-term changes in the benthic invertebrate fauna have been tracked. The summarized results show that the impact of factors such as pollutants, climate change and the spread of invasive species generate constant pressure on freshwater ecosystems, which is why the natural processes of restoring freshwater biodiversity in European freshwater basins have been suspended indefinitely.

➤ contribution to the study of the specific reactions of freshwater biocenoses to the physicochemical parameters and stress factors in the aquatic environment, leading to the development of adaptive mechanisms (No 84).

➤ trophic structure of the macrozoobenthos in the larger lakes and reservoirs in Bulgaria was studied and analyzed. (Nos. 57, 64, 65, 68, 76). The influence of eutrophication and the amount of organic carbon in the sediments on the structuring of the trophic groups of the river macrozoobenthos was analyzed. It has been established that under anthropogenic influence a transformation takes place in the composition of the trophic structure, associated with a decrease in the abundance of the more sensitive groups.

4. Scientific and applied contributions and expert activity

They include: methodologies to help institutions and governing bodies - 2 pcs. for assessment of the ecological condition of surface flowing and standing waters in Bulgaria, according to the requirements of Ordinance H-4/2012. Preparation of reports on the national intercalibration of biological elements for surface water quality and biological classification - 4 nos. Development of plans for the management of reserves (Pirin, Bistrishko Branishte, Torfeno Branishte, etc.), ecological assessment of the PURB (2016-2021) of the Western Baltic region, preparation of the EIA for the investment proposal "Improvement of the route of Lot 3.2 of the Struma highway". In addition:

➤ the determined ecological status of 11 lakes, 39 dams and 40 reference points of 15 types of standing water bodies in Bulgaria, as well as in assessing the ecological status of 35 rivers in the Aegean and Black Sea watersheds, through the application of adapted indices using the macrozoobenthos as a key biological element for quality in the sense of the WFD of the EU (No. 60, 64).

➤ a six-year monitoring and determination of the integrated ecological status of Atanasovsko Lake was carried out in order to develop a program of measures for its restoration and long-term protection. A specific approach was applied in which, depending on the salinity of the water, appropriate metrics were used to evaluate fresh, saline and hypersaline waters (No. 58).

➤ the correctness of the assessment of the ecological state of flowing water bodies through the use of model lotic ecosystems was analyzed, and recommendations were proposed for the control bodies to increase the frequency and number of points for the adequate assessment of their ecological

state (No. 70, 83). The applicability of trophic indices (RETI/PETI, ITC) in assessing the ecological status of standing and flowing surface waters has been analyzed (57, 60, 64, 76).

➤ the draft text of the "Strategy for Biological Diversity in the Republic of Bulgaria" was updated and supplemented, according to the current normative and strategic goals and documents of the EU (E14.10).

➤ participation in the development of a methodological framework for assessment and mapping of the state of ecosystems and ecosystem services in Bulgaria (E14.2).

➤ proposed and validated new methodology and type-specific scales for assessing the ecological status of different types of surface stagnant waters using the biological quality element "macrozoobenthos" (No. 62).

5. Significance of the obtained results, proven by citations, publications in prestigious journals

The results of Assoc. Prof. Varadinova's scientific activity are clearly visible in the world databases (Scopus, WoS) with a total of 261 citations at the time of submitting the documents for the competition. For the purposes of the competition, a total of 189 citations were presented after holding the position of "associate professor" at IBEI-BAN, and 147 of them were included in the self-evaluation table. Of these, 71% are in journals with IF and the rest in journals with SJR, which brings the candidate 294 points to the evaluation result. The total number of points from the candidate's self-assessment is 1334 (not including all submitted materials), which is more than twice the Minimum requirements of the BAS of 640t. for occupying the academic positions of "professor" in Professional direction 4.3. Biological Sciences, also accepted as criteria of IBEI-BANS in the regulations for the terms and conditions for acquiring scientific degrees and for occupying academic positions from 25.11. 2022

6. Management of scientific research, staff training and teaching activities

At the time of submitting the documents, Assoc. Prof. Varadinova was the supervisor of two successfully defended doctoral students, the supervisor of 7 national scientific and scientific-applied projects or work packages, a participant in a total of 20 scientific and scientific-applied projects with national or EU funding.

Along with the broad scientific activity, Associate Professor Varadinova also demonstrates her teaching capacity by leading specialized courses as a titular teacher at the "N. Rilski" Blagoevgrad and as a part-time teacher at Plovdiv University "P. Hilendarski" in directions directly related to her scientific expertise.

7. Conclusion

Assoc. Prof. Varadinova is an established scientist with clearly defined research, organizational and teaching qualities in the field of freshwater ecology. Its activities have already received their recognition in international and national sources, as well as in the practice of national institutions. Her production exceeds the requirements of the Law on the development of the academic staff in the Republic of Bulgaria and the criteria of IBER-BAS for holding the academic position "Professor". Based on the above, I vote "FOR" the election of Assoc. Prof. Varadinova for the academic position of "professor" in the current competition for the scientific specialty "Hydrobiology"

Signature: Date: 26.07.2024

V. Karamfilov