Вх.№ 775/ НО-05-06/ 14.08.2024г.

S T A T E M E N T

by Prof. Dr. Mariyana Ivanova Lyubenova – Sofia University "St. Kliment Ohridski"

Regarding the competition for associate professor in the scientific specialty 'Hydrobiology,' announced in State Gazette issue 36 from April 23, 2024, with candidate Senior Assistant Dr. Hristina Vasileva Kalcheva from IBER-BAS, appointed according to Order No. 45/June 20, 2024, by the Director Assoc. Prof. Dr. Vladimir Vladimirov as a member of the scientific jury.

1. **Brief presentation of the candidate.** Senior Assistant Dr. Hristina Kalcheva holds a Master's degree with a specialization in "Hydrobiology and Water Conservation" (1990). In 2011, she defended her doctoral dissertation at the Institute of Zoology and the Center for Training at the Bulgarian Academy of Sciences (BAS). Since 2009, she has been working at the Institute of Biodiversity and Ecosystem Research at BAS as a biologist, assistant, and senior assistant (from 2012 to present), with 18 years, 5 months, and 13 days of experience in the specialty (as of June 20, 2024), and around 13 years as a PhD. She has a good command of English and Russian. She has attended training courses in statistics (3), English language, and GIS, 2 specialized scientific courses, 4 training seminars, 2 training schools in Bulgaria and abroad, and a specialized two-week visit for inter-academic exchange in Bucharest (2018). She has participated in the organizing committees of 6 scientific conferences held in Bulgaria and abroad. She is a member of the Union of Scientists in Bulgaria, Biology section, and the International Association for Danube Research (IAD). Her professional activity focuses on aquatic microbial ecology, freshwater ecology, statistical methods in biology, and water quality assessment (Merck).

2. General description of the scientific output. Dr. Kalcheva is participating in the current competition as a co-author of 43 scientific publications, including 7 publications and 1 abstract related to her doctoral dissertation; 10 of these publications do not have an IF or SJR, but some are indexed in Scopus or WoS. For the competition, 24 publications are subject to review: 7 publications are presented under section B4 (Habilitation work) with a total IF of 3.223, including 6 publications in Q3 and 1 in Q4; 13 publications are presented under section G7, with 9 publications having an IF of 3.339 and 4 with an SJR of 0.653, including 2 publications in Q2, 6 in Q3, and 1 in Q4; 4 publications are presented under section G8, which include book chapters or parts of collective monographs. Overall, the total IF of the reviewed publications is 6.562 and SJR 0.653, with 12 in Q3, 2 in Q2, and 2 in Q4. Additionally, the candidate has presented her editorial contributions as a guest editor for a journal or a Book of Abstracts and has published 27 abstracts from 18 international forums. Dr. Kalcheva's personal involvement in the scientific output is as follows: she is the first author in 3 publications, the second author in 4, and the third

author in 5, meaning she is among the top three authors in 50% of the reviewed publications, with her contributions in the remaining publications in subsequent positions. Considering the complexity of modern science, it is challenging to determine the precise individual contribution of the candidate. The materials for the competition are meticulously prepared, well-organized, easily readable, and demonstrate that the candidate is organized and capable of handling scientific data and works.

3. Research Activities

3.1. Research Contributions of the Candidate: 10 scientific contributions, 2 of which are confirmatory, 9 scientific - applied contributions and 5 scientific -methodological contributions. In total, the candidate has 24 significant contributions, demonstrating her active and productive research efforts *– Application 1***.**

А. *Contributions to Freshwater Microbial Taxonomy and Freshwater Ecology - Researches on the Floodplain Terrace of the Danube River and the Danube River (Bulgaria and Hungary) - В4.1, В4.2, В4.7, Г8.1, Г8.2, Г8.3; Researches on reservoirs with and without the presence of the invasive Zebra mussel - В4.3, В4.4, В4.5, В4.6, Г7.1, Г7.2, Г7.3, Г7.4, Г7.10 and Researches on Carp Ponds - Г7.6, Г7.7, Г7.8. Summary: 18 publications/ 10 scientific contributions (including 2 confirmatory), 4 scientific and applied contributions and 4 scientific and methodological contributions.*

Б. *Invasive Alien Species – contributions to taxonomic composition, distribution, introduction pathways, prevention, and management - G7.9, G7.13, G8.4 - 3 publications/ 2 scientific-applied contributions*

C. *Application of Statistical Methods in Data Analysis in Other Research - G7.5, G7.11, G7.12 – 3 publications/ 3 scientific-applied contributions and 1 scientific - methodological contributions*

3.2. Citation and referencing of scientific production. For the competition, it is noted that 26 publications have been cited from 98 sources, or 60.5% of the scientific production. Of the 60 peer-reviewed and indexed sources in globally recognized databases (Web of Science and Scopus), 23 publications are cited, which exceeds the minimum requirements. The citing sources have a total IF of 122.212 and SJR of 6.964. Among these sources, 26 are in Q1; 11 are in Q2;

10 are in Q3; and 12 are in Q4, indicating that Dr. Kalcheva is an established scientist recognized by the scientific community.

***3.3. Participation in Scientific Projects*.** Dr. Kalcheva has participated in 14 research projects – 9 international and 3 funded by the Bulgarian National Science Fund (FNI). The national requirements for the academic position of "Associate Professor" are exceeded by Dr. Kalcheva – with a total of 514 points: A – 50; B – 102; C – 242; and D – 120 points.

4. Observations and Recommendations. In my scientific interactions with Dr. Kalcheva, I know her to be a responsive and serious colleague with diverse interests. I recommend that the future Associate Professor makes efforts to lead projects and, if possible, engage in the training of young professionals – graduates and doctoral students. When describing her contributions, it is necessary to demonstrate a higher level of generalization and synthesis.

5. Conclusion. *Based on the analysis of the candidate's scientific and applied research activities, I consider that Assistant Professor Dr. Hristina Kalcheva meets the requirements of the Bulgarian Law for the Development of Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of LDASRB, and the Rules of Procedure of the Institute of Biodiversity and Ecosystem Research (IBER) for the position of* ***Associate Professor****. My main argument is that she is an established scientist in the field of Hydrobiology and Water Ecosystem Protection with a broad profile, having acquired valuable scientific practices, and exceeding the point requirements—both national and those set by IBER—for the* ***Associate Professor position****.*

All this provides me with grounds to evaluate her overall work ***positively****. I also suggest that the esteemed* ***Scientific Jury vote positively****, and the* ***Scientific Council of IBER – BAS select Assistant Professor Dr. Hristina Kalcheva for the position of "Associate Professor" in the scientific field of Hydrobiology and Water Ecosystem Protection.***

Date: 15.08.2024

Sofia Prepared the statement:

(Prof. dr Mariyana Lyubenova)

Application 1

Scientific contributions

1. For the first time, the spatial distribution and seasonal fluctuations of bacterioplankton were studied in wetland zones of different types along the Danube River near Belene.

2. For the first time, phototrophic anaerobic purple sulfur bacteria from the genera *Chromatium* and *Thiopedia*, as well as filamentous phototrophic green non-sulfur bacteria from the genus *Chloroflexus*, were identified in the channels and swamps.

3. For the first time, bacterioplankton were studied in two wetland zones on the floodplain terrace of the Middle Danube (Hungary) from April to October 2014 at the Mohács site in the Béda-Karapancsa National Park.

4. Original contribution - comparison of wetland morphology and biogenic content, which depends on the degree of connection of wetlands with the river and macrophyte coverage in Hungarian and Bulgarian sections of the Danube River.

5. Original contribution in studying bacterioplankton in Lake Srebrna and determining it as mesotrophic based on microbiological indicators.

6. For the first time, bacterioplankton was seasonally studied for three years in reservoirs affected by *Dreissena* spp. - Ogosta and Zhrebevo, and an unaffected one - Koprinka, and a positive influence of the mussels was observed. The condition of all three reservoirs was determined as mesotrophic.

7. Original contribution to the influence of *Dreissena polymorpha* - increase in dissolved oxygen in a study of 10 lakes and 40 reservoirs - 22 affected and 30 unaffected by the invasive species.

8. Confirmatory contribution to the increase in transparency by Secchi disk in the study of 10 lakes and 40 reservoirs – 22 affected and 30 unaffected by the invasive species.

9. The transparency of the water column, concentrations of total phosphorus (TP), and chlorophyll-a (Chl) in 49 Bulgarian reservoirs – 23 affected and 26 unaffected by *Dreissena* spp. – were compared based on original and literature data.

10. Confirmatory contribution to the influence of *Dreissena polymorpha* on two of the trophic characteristics – phytoplankton abundance and transparency – in the study of 18 reservoirs, 10 affected by the zebra mussel during the summer and autumn of 2016.

Scientific – applied contributions

1. Application of purple bacteria for resource recovery from waste.

2. Improvement of the morphology of Lake Srebrna.

3. Provision of Prof. Dr. Rumen Kalchev complete bibliographic list of scientific publications.

4. Applied contribution in aquaculture through 3-year studies of 7 carp ponds, 3 of which were fertilized with cattle manure, and investigation of 10 biotic factors and their relationship with carp production.

5. Information on the creation, structure, mission, and activities of the ESENIAS and DIAS networks for invasive alien species has been presented.

6. A brief overview of aquatic invasive alien species in the Danube River basin and the Western Black Sea coast has been provided.

7. Summarized data on the distribution and ecology of 17 species from the family *Taeniopterygidae* (Insecta: Plecoptera) in Bulgaria have been presented.

8. A geographically broad study of the relationship between radial growth (RWI) of two tree species and two of their characteristics – SLA (Specific Leaf Area) and LWR (Leaf Weight Ratio) – to determine their growth strategy for selecting suitable trees to increase forest revenue.

9. Ecotoxicological study with the herbicides paraquat and glyphosate on the germination and early development of 2 standard test plants.

Scientific – methodological contributions

1. For long-term analyses in the Danube River, a multiple regression equation has been proposed to predict the volume of phytoplankton with independent variables: water level, chlorophyll-a, and dissolved inorganic nitrogen (R=0.93).
2. A discrepancy in trophic status determined by Secchi disk was observed after the invasion of zebra mussels in Reservoir Zhrebchevo. There was a divergence in trophic status assessment based on inorganic phosphorus and phytoplankton biomass.
3. Transparency using the Secchi disk and chlorophyll-a concentration can be used as indicators in assessing the trophic and ecological status of surface standing water bodies affected by invasive mussels.
4. A coefficient of 1.27 has been proposed to convert Chl data extracted in 90% acetone and measured on a Spekol with a bandwidth of 10 nm to data extracted in 90% ethanol and measured on an Ultrospec with a bandwidth of less than 3 nm.
5. Use of specific ISSR method primers in DNA analysis of test plants in ecotoxicological studies of paraquat and glyphosate.**