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OPINION

by Assoc. prof. Dr. Kremena Blagovestova Stefanova

Chairman of the Scientific Jury, identified by Order No. 1 of 03.01.2023. of the Director of IO-BAS, Varna, in a competition for the academic position "Professor" in the field of higher education: code 4 "Natural Sciences, Mathematics and Informatics", Professional field: code 4.3 "Biological Sciences" Scientific specialty "Hydrobiology", Scientific field " Macrozoobenthos ", announced in the State Gazette No. 87/01.11.2022

The only candidate in the announced competition for the academic position of "Professor" in Professional field: code 4.3 "Biological Sciences", Scientific specialty "Hydrobiology", Scientific field "Macrozoobenthos" - Associate Professor Valentina Ruseva Todorova has been working at the Institute of Oceanology since 1992, with 31 years of experience in the "Marine Biology and Ecology" Department in the field of marine macrozoobenthos biodiversity. For the past 10 years, she has demonstrated rapid career development, after the PhD defense in IO – BAS in 2005, in 2011 she successfully held the academic position of "associate professor", the next year she was elected as the head of the "Biology and Ecology of the Sea" section, from 2017 to 2021 is a deputy director of IO-BAS for scientific research. The scientific-professional and thematic development of Associate Professor Todorova covers a wide range of scientific interests such as the study of marine macrozoobenthos biodiversity at the species and supraspecies (communities, biotopes, habitats) level; development of indicator systems with threshold values for assessment of the ecological status of marine macrozoobenthos according to European directives, determination of population characteristics of shellfish species, assessment of the impact of non-native invasive species and anthropogenic pressure and impact on the state of the marine environment, in particular bottom habitats; classification and mapping of marine benthic habitats; development of programs for monitoring the marine environment, etc. related to European legislation.

The presented documents fully certify the fulfillment of the requirements for occupying the academic position of "Professor" under the, and in terms of the quantitative indicators of the criteria, they exceed them. For example, for the group of indicators "B" (Habilitation thesis - scientific publications in publications that are referenced and indexed in world-famous scientific information databases Web of Science and Scopus) of the minimum required 100 points, the candidate reaches 148 points with 9 publications (Q1 – 2, Q -2, Q4 – 4, referenced – 1), of which he is the first author of 5. Other scientific publications in publications that are referenced and indexed in world-famous databases with scientific information (Web of science and Scopus),

falling into group of indicators D.7. (Act on Development of the Academic Staff in the Republic of Bulgaria) and book chapters, contains a total of 18 articles and 1 book chapter, also exceeding the minimum requirements by nearly 2 times. Of no less weight are the 18 publications and 4 technical reports on projects that are not referenced in Web of science and Scopus, but reflect the in-depth work and professional expertise of the candidate. The publication of research results in prestigious journals in the field of ecology such as *Frontiers in Marine Science* , *Estuarine, Coastal and Shelf Science* , *Aquatic Invasions* , *Marine Environmental Research* , etc. also emphasizes the significance of Assoc. prof. Todorova's developments not only in a regional but also in an international aspect.

Another very important element for the quality of the work of each scientist is his recognition in the scientific and academic circles with the citation of the scientific production in the national, regional and international literature. A reference is provided for 337 citations of the 28 scientific publications, the high percentage of citations in foreign scientific journals being an indisputable fact. The total number of points (674) achieved by the candidate under this criterion exceeds more than 5 times the minimum requirements (120).

An extremely important and key point in evaluating the scientific output of Associate Professor Todorova are the identified contributions that have not only fundamental but also applied achievements. They are grouped into four main fields, such as:

- study of the biodiversity, structure, functional characteristics and ecology of the benthos in the Black Sea;
- development of indicator systems for assessing the ecological state of the Black Sea ecosystem;
- development of methodical standards for harmonized application of European legislation
- mapping and modelling of benthic habitats in the Black Sea; protection of marine nature through connected networks of marine protected areas

From the presented detailed report on contributions of an original and up-to-date nature, the following points are distinguished:

- Refinement of the classification of national benthic types biotopes based on species diversity, biomass, number and distribution of macrozoobenthos communities depending on natural abiotic (depth, type of sediment, temperature and dissolved

oxygen) and anthropogenic factors; mapping on bottom habitats with different spatial scope

- Research on non-native species as a key ecological pressure for the Black Sea – development of the *R. venosa* impact indicator on the mussels populations, for the first time is established the spatial scope of its negative impact in front of Bulgarian coast through an ecosystem approach, management alternatives for the invasive species *Rapana venosa* are explored to achieve good marine environmental status, good economic status and low management costs
- An original approach was developed for assessment of the impact of mobile bottom fishing gear as a key anthropogenic pressure on the ecological condition of bottom habitats in the Bulgarian Black Sea shelf.
- Development of a science-based strategy for nature conservation in ecologically connected networks of marine protected areas through a holistic conservation approach to build a well-connected system of marine protected areas based on a complex of factors - physical oceanographic connectivity (currents, circulation), beta-diversity and genetic relatedness of multiple species with diverse life cycle characteristics.
- The type-specific reference conditions for all benthic biotopes, characteristic of the sediments from the Bulgarian Black Sea shelf and coast, were derived and the area and proportion of each type of habitat in good/poor condition were estimated.
- Implementation of the European directives (WFD, MSFD, Habitats Directive), creation of the scientific basis for the expansion and completion of the network of marine protected areas NATURA 2000 zones in the Bulgaria Black Sea coast.

Evidence of high expert skills is the candidate's membership in a number of advisory bodies and working groups to various ministries and national, regional and European organizations - Advisory Group on the Convention on Biological Diversity to the Black Sea Commission, Technical Group on Benthic Habitats and Seabed Integrity - TG SEABED to the EC, National Council for Biological Diversity to the Minister of Environment and Water, Advisory and Coordination Council for the Protection of the Black Sea Environment.

For the last 10 years, the project activity of Associate Professor V. Todorova has been impressive. Detailed information on the implementation of 14 national and 15 international projects/programs with different sources of funding is presented in the documents. She was a

leader of two national projects, in 3 of the international ones - she coordinates the research team of IO-BAS, in several she is a leader of WP or task, member of the Management Committee, etc. Demonstrates extremely good leadership skills.

Along with all the listed activities, it is good to emphasize the leadership of a doctoral student who was dismissed in October 2022 with the right to defense.

Conclusion. The documents and materials presented by Associate Professor Valentina Todorova meet all the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations on its Implementation of the ADASRB and the relevant Regulations of the IO-BAS. The candidate's achievements have original scientific and applied contributions that have received international recognition as a representative part of them have been published in journals and scientific collections issued by international academic publishing houses. All the above give a ground for my positive assessment and recommend to the honorable members of the National Academy of Sciences to vote "FOR" the awarding of the academic position of "professor" in the National Assembly to Assoc. Dr. Valentina Ruseva Todorova in the field of higher education 4 Natural sciences, mathematics and informatics, professional field 4.3. Biological sciences, Scientific specialty: "Hydrobiology", Scientific field: "Macrozoobenthos".

28.02.2023

City Varna

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