



OPINION

by prof. Dsc Yana Ilieva Topalova /researcher R4/
Faculty of Biology of SU "St. Kliment Ohridski", member of the scientific jury,
according to Order No. 1 of 3.01.2023 of the Director of IO-BAS

According to the procedure for occupying the academic position "PROFESSOR", field of higher education: 4. Natural sciences, Mathematics and informatics, Professional direction 4.3. Biological sciences, Scientific specialty Hydrobiology, Scientific direction "MACROZOOBENTOS", announced in DV- No. 87/01.11.2022

for the needs of the "Biology and Ecology of the Sea" section at IO-BAS

1. General review of the tender documentation submitted by the applicant

The documentation presented by the only candidate in the competition for professor, Assoc. Dr. Valentina Ruseva Todorova, can be characterized as follows: it is in an appropriate volume, arranged precisely, highly organized, easily readable and traceable, constructed with style and class, fully complies with the requirements of the LDASRB, the rules for its application and the rules of the IO-BAS.

2. Career development and thematic profile of the candidate

Docent Valentina Todorova was born in 1966. She completed her higher education at the "St. Kliment Ohridski", Faculty of Biology in 1992, from when my impressions of her also date. She has a master's degree in biology with a specialization in "Hydrobiology and Water Conservation" and has been one of the most motivated and dedicated students in hydrobiological research since her student days. After graduation, she joined IO-BAS, where she went through all stages of the development of a researcher with a permanently shaped interest in the biology and ecology of the sea, going through the deepening of research on marine macrozoobenthos. Throughout her career, she has continuously broadened, enriched, upgraded and deepened her research interest and profile. As of the date of preparation of this opinion, among the candidate's wide range of qualities and skills, the following can be mentioned: the talent to explore and present in various scientific products marine ecosystems, a highly valued partner in scientific research projects, organizational and management skills obtained as a manager of the "Biology and Ecology of the Sea" section and as deputy director of IO-BAS, head of scientific research projects and teams, participant and author of the preparation and verification of environmental normative documents, desired expert and consultant in national and international bodies - MOEW, EAES, BDCHR, General Directorate "Environment" of the EC, Black Sea Commission, etc.

3. Research activity of the candidate

3.1. Review and analysis of publications and scientometric data

The general impression from the documentation submitted for the competition is that the following can be pointed out in the foreground: scale, large volume, diversity, high indicators corresponding to high scientific achievements, meeting the requirements for the occupation of the academic position "PROFESSOR" at IO-BAS and according to the national requirements for the given scientific field. Below in the table I have presented the specific numbers of scientific papers by group and the corresponding number of points.

The scientific publications of Assoc. Dr. Valentina Todorova include 86 titles. Four of them are related to the educational and scientific degree "doctor", 35 were submitted for the competition for the academic position "associate professor", and 47 were submitted for review for the competition for the academic position "professor". There are a total of 41 titles referenced in the world-famous databases with scientific information (Web of Science and/or Scopus), of which 29 publications - 28 scientific articles and 1 book chapter - are presented in this competition. Apart from the reference for compliance with the minimum national and IO-BAS requirements, 18 other publications (not referenced in Web of Science and Scopus) and selected scientific and technical reports are also presented in connection with the competition.

Group indicators	Evidence presented	Num ber of points	Num ber of points
A.	Dissertation on a topic for ONS Doctor	50	50
B.	4. Habilitation thesis - scientific publications in publications that are referenced and indexed in world-renowned scientific information databases Web of Science and Scopus	100	148
C.	7. Scientific publications in publications - referenced and indexed in world-famous scientific information databases Web of Science and Scopus, outside of the habilitation work - 13 items. 8. Book chapter - 7 pcs.	220	346
	ОБЩО ЗА Г.		346
D.	Citations in scientific publications, as required	120	674
E.	Management of in nat. Projects – 6 pcs. Participation in international projects - 9 nos. Attracted funds	150	787
ALL		640	2005

All the indicated numerical data lead to two important intermediate conclusions: 1/ The candidate has a diverse, rich and fully compliant scientific output that exceeds the necessary indicators for the position of "PROFESSOR"; 2/ She is a renowned researcher and creator nationally and internationally with his developments in the field of marine biology and ecology.

3.1. Basic scientific and scientific-applied contributions on the habilitation report and as overall contributions to the publication activity

Associate Professor Todorova's scientific contributions can be systematized in the following directions: development of scientific knowledge about 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 methodological standards for harmonized application of European legislation in the field of biodiversity, water and the marine environment; mapping and modeling of benthic habitats in the Black Sea; development of the scientific and methodical foundations for marine spatial planning and for the protection of marine nature through connected networks of marine protected areas. In summary, the contributions can be presented as:

First: An original contribution to the enrichment of scientific knowledge in the field of the biodiversity of marine macrozoobenthos and other groups of organisms at the species-population, zoocenotic and habitat level of organization. These are the most numerous publications 16 in number. They systematized 25 years of macrozoobenthos data in the period 1998-2022. In the last decade (2011-2021), new empirical data from over 1400 sediment samples on the biodiversity, abundance and distribution of marine macrozoobenthos from the Bulgarian Black Sea shelf were accumulated. . This is a "bible of the Black Sea benthos" by contribution.

Second: Original contribution to the development of scientific knowledge about non-native species in the Black Sea, including the introduction of new alien species and the ecological impact of established

invasive species. Development of the scientific foundations for the management of the invasive species *Rapana venosa* /6 publications/.

Third: Development of the scientific basis for assessing the ecological state of the macrozoobenthos and the state of the marine environment in terms of benthic habitats and the integrity of the seabed. Development of indicator classification systems /5 pcs. publications/. In this section, a system of macrozoobenthos status indicators has been developed as a mandatory biological element for the quality of coastal waters (BEC) under the Water Framework Directive (WFD) and an element for assessing benthic habitats under the Marine Strategy Framework Directive (MSFD). From the significant accumulated volume of data, by applying statistical analysis methods, the type-specific reference conditions for all benthic biotopes, characteristic of the sediments from the Bulgarian Black Sea shelf and coast, were derived.

Fourth: Development of the scientific foundations for the assessment of physical disturbances from mobile bottom fishing gear on the seabed and benthic habitats /3 pcs. publications/. The first study of its kind was conducted in the Black Sea, which assesses the physical disturbances on the seabed by mobile bottom fishing gear and brings out the relationship between this type of anthropogenic pressure and the ecological state of the bottom habitats in the Bulgarian Black Sea shelf. Five years of data from the Fishing Vessel Monitoring System (VMS) were analyzed using an adapted methodology of the International Council for the Exploration of the Sea (ICES) to estimate pressure using the SAR (swept-area ratio) indicator.

Fifth: Contribution to the development of knowledge and assessment of ecosystem services of benthic habitats in European seas in support of marine spatial planning and management. Information on 56 EUNIS-classified European seabed biotope types and their associated goods, services, sensitivity issues and conservation status is systematized, the latter relating to management and protection tools currently applied to these biotopes of European or international level. Goods and services are classified in adapted categories proposed by the MEA (Millennium Ecosystem Assessment). For each biotope, the categories of goods and services are evaluated in three classes "High", "Low" and "Negligible / Not applicable / Unknown".

Sixth: Contribution to the development of a science-based strategy for nature conservation in ecologically connected networks of marine protected areas / 6 nos. publications/. A holistic conservation approach is proposed to build a well-connected system of marine protected areas based on complex knowledge of physical oceanographic connectivity (currents, circulation) and propagule dispersal, species beta-diversity and genetic relatedness of multiple species having life cycles with various characteristics.

Seventh: The methodical contributions, the scientific and applied contributions to the implementation of European environmental directives with users MoEW, BDCR, as well as the contribution to European and regional scientific cooperation and to the development of the scientific and technical infrastructure of IO-BAS are also significant.

4. Pedagogical activity of the candidate

The pedagogical activity of the candidate consists of participation in the training of students and doctoral students. There is data on one doctoral student trained by her, dismissed with the right of defense and evidence that associate professor Todorova is responsible for the accreditation of IO-BAN for training doctoral students, which requires a deep knowledge of the specifics of scientific programs and training modules for doctoral students.

5. Expert activity and project activity

Associate Professor Todorova is a respected, sought-after expert in the field of marine biology and ecology, both nationally and internationally. Her expertise in the field of competition is remarkable in terms of volume, content, activity, acquired competences and qualifications and diversity and was touched on in more detail in section 2 of the opinion. She participates in and leads numerous national and international projects - she led 2 national projects, the Bulgarian team in 4 international projects, she participated in 9 international projects and numerous national ones.

6. Summarizing commentary, personal impressions, critical notes and recommendations

The analysis made so far of the professional development of associate professor Todorova shows that during her 20 years of work experience she has developed as a researcher, expert, creator, manager and leader in IO-BAS with a clear profile and high qualification, fully corresponding and coinciding with the topic of the announced competition for PROFESSOR. The active publication, expert and project activity in terms of volume, content and quality covers and repeatedly exceeds the requirements for holding the position of PROFESSOR in IO-BAS and according to the national requirements for holding the position. She is also an internationally recognized expert. The scientific-research activity resulted in numerous normative documents for the assessment and management of waters and marine ecosystems with users MoEW, RDCHR, IAEA, etc.

I have had personal impressions of Associate Professor Todorova since way back in 1996. I highly appreciate her thorough and innovative approach to the study of marine ecosystems. I also attach importance to the fact that she demonstrates and successfully applies mastery in the construction, management and successful implementation of interdisciplinary projects, the leadership of scientific teams, demonstrating and improving her managerial and leadership skills.

I value the fact that in her work she is always purposeful, focused and oriented towards specific high results. These words of mine are very clearly illustrated in the prepared documentation for the position of "PROFESSOR", but I, as a person from the professional guild, have repeatedly seen her qualities - research talent, determination, communication, teamwork, leadership, focus on the main, giving personal example, demandingness to yourself and to your partners. My recommendation is that in the future he should find time to create his personal school and above all devote time to training doctoral students in order to transmit and multiply his valuable knowledge, skills, qualifications and competences through young researchers.

7. Conclusion

Based on the above analysis of the tender documentation presented, and from my long-term impressions of Associate Professor Todorova, I believe that she meets the requirements for a PROFESSOR, formulated in the ZRASRB, the rules for its implementation and in the Rules of the IO-BAS. Without a doubt, she is a specialist in the field of hydrobiology with an emphasis on "biology and ecology of the sea", with a proven place and role in the BAS and internationally. In my opinion, this is sufficient argumentation to recommend to the respected Scientific Jury and to IO-BAS - in accordance with Art. 29 b, para. 1, in connection with Art. 29 of the LDASRB, as well as with Art. Art. 60 and 61 of the Regulations for its implementation - to vote for the acquisition by an associate professor. Dr. Valentina Ruseva Todorova in the academic position "PROFESSOR".

1.03.2023.

Author of the Opinion:

/prof. DSc Yana Topalova/