

## OPINION

by Prof. Dr. Rosen Todorov Tsonev

from the Department of Ecology and Environmental Protection at the Faculty of Biology of Sofia University "St. Kliment Ohridski" of the materials, submitted for participation in a competition for the academic position of "Associate Professor" in the field of higher education: Code 4. "Natural Sciences, Mathematics and Informatics"; Professional field: Code 4.4. "Earth Sciences"; scientific specialty: "Geology of Oceans and Seas"; scientific field: "*Geological-geomorphological mapping and monitoring of the coastal zone*", announced in the State Gazette No. 63/01.08.2025.

The only candidate in the current competition for the academic position of "Associate professor" in 4.4. "Earth Sciences"; Scientific specialty: "Oceanology"; Scientific field: "Geological and geomorphological mapping of the coastal zone and shelf", announced in the State Gazette No. 63/01.08.2025, is the Ass. Prof. Bogdan Kirilov Prodanov, PhD, from the "Coastal Zone Dynamics" section, Institute of Oceanology – BAS in Varna town. The submitted to me materials include all required documents for the competition, in accordance with the requirements of the regulatory framework. Ass. Prof. Bogdan Kirilov Prodanov, PhD, was born on 23.05.1987 in Varna. He completed his secondary education in his hometown as a geodesy specialist at the "Vasil Levski" Professional High School of Architecture, Construction, and Geodesy. After that, he initially studied at the "St. Ivan Rilski" University of Mining and Geology, where he completed his bachelor's and master's degrees - "Master of Engineering in Exploration Geophysics" with a thesis on "Application of multi-ray sonar systems to assist in the geological mapping of Burgas bottom sediments". He then obtained a second master's degree in Geomorphology from the Faculty of Geology and Geography at Sofia University "St. Kliment Ohridski". The topic of his second thesis is "Beach and dune formations and anthropogenic changes in the relief in the area of Kavatsite and Smokini beaches (Bulgarian Black Sea coast)". From years 2013 to 2016, he was a regular PhD student at the "Prof. Fritjof Nansen" Institute of Oceanology – BAS, defending a PhD thesis on "Geological basis for mapping bottom habitats on the Bulgarian continental shelf off the Avren coast" and obtaining a PhD in "Geology of the oceans and seas". Since 2017, he has been an assistant and assistant professor in the "Coastal Zone Dynamics" section of the "Prof. Fritjof

Nansen" Institute of Oceanology, BAS. He also has additional experience from his studies at University of Mining and Geology and as a geophysicist at the National Institute of Geophysics, Geodesy, and Geography at the Bulgarian Academy of Sciences.

The presented list of publications demonstrates the main areas of scientific activity of Ass. Prof. Bogdan Prodanov in the field of geomorphological and lithological conditions of the coastal zones of the Bulgarian continental shelf. Also it includes the litho-dynamic and morpho-dynamic of the coastal zone, the coastal risk from hazardous hydro-meteorological conditions, mapping of the bottom substrate and habitats in the coastal zone, especially of the sand dunes, but also assessment of anthropogenic pressure, including pollution, coastal development, changes in coastal dynamics, etc. Ass. Prof. B. Prodanov uses innovative techniques and methods to create digital models of the bottom relief in the Bulgarian Black Sea waters, create an integrated geo-database, and use unmanned aerial systems to map the coastline, including the underwater relief.

Among the contributions of Ass. Prof. Dr. B. Prodanov with fundamental scientific significance, are his complex multidisciplinary studies of the seabed, the bottom substrate, and the processes that shape the contemporary appearance of the underwater coastal slope of the Bulgarian shelf and the coastal zone [B.4-1], [B.4-2], [B.4.6], [B.4.7], [G.7-13]. The areas of these studies are the Avren coast between Cape Galata and Cape Palets, the waters of Varna Bay and the Strandzha coast between the mouth of the Dyavolska River and the village of Rezovo. Particularly important and original contributions are those for the assessment of the loss of natural seabed along the entire Black Sea coast, which he calculates at a total of 2.013 sq. km, as well as the mapping and typology of coastal dunes [B.4-5], [G.7-9], [G.7-11]. He identified eight beach-dune systems, with a total area estimated at 988.21 ha. He proposed that most of them must be declared as natural landmarks under the Protected Areas Act. Big practical significance has produced by him assessment of macro-waste pollution on beach-dune systems along the Bulgarian Black Sea coast [B.4-4], [G.7-1] and the mapping of dune habitats in accordance with Annex 1 of the Biodiversity Act and the Black Sea Coast Planning Act. It also includes an assessment of the loss of these habitats because of human activity. An original scientific and applied contribution is the introduction of aerial photogrammetry with unmanned aerial systems for high-precision reconstruction of the relief in the coastal zone. Other scientific and applied contributions include the assessment of the condition of coastal lakes, the determination of Type-Specific Reference

Hydromorphological Conditions (TSRHC) in accordance with the requirements of the Water Framework Directive (WFD 2000/60/EC) [G.7-10], [G.7-17], the study of hydrodynamic conditions and the management of sea flood risk [G.7-18], etc. His important collaborative work as part of scientific teams, together with biologists, is demonstrated by the "Methodology for mapping, determining the boundaries and types of sand dunes, approved by the Minister of Environment and Waters in 2024, pursuant to Article 11, paragraph 2 of Ordinance No. 1 of 16.09.2008 under the Black Sea Coast Development Act (BSCDA)". This methodology has very important practical and applied significance for the protection of one of the most endangered natural habitats in Bulgaria – the Black Sea dunes. Here I would like to note that another similar contribution by Ass. Prof. B. Prodanov, again the result of successful collaboration, this time with archaeologists – combining remote and geophysical methods for detecting underwater archaeological sites – is in my opinion, more fundamental scientific than applied one. The results of this work are presented in the article "The use of geophysical methods for detecting underwater archaeological sites in the Black Sea coastal zone".

I have no serious critical comments on the work of Ass. Prof. B. Prodanov. The only thing that stands out is the relatively low number of citations (16) compared to his rather great publishing activity (40 publications). Although he exceeds the requirements for this indicator (80 points against the required 60 points), this demonstrates, to a certain extent, a lack of awareness, especially abroad, of his scientific output. An increase in the number of publications in international refereed databases (Web of Science and Scopus) would probably lead to greater awareness and more frequent citations of his publications, which, from everything stated so far, undoubtedly have great scientific and practical significance.

The documents available in the competition, categorically present Assist. Prof. Bogdan Prodanov, PhD, as an established scientist and researcher, but also as an honorary lecturer who has taught courses at the Department of "Climatology, Hydrology, and Geomorphology" at the Faculty of Geology and Geography of Sofia University "St. Kliment Ohridski". Half of his scientific publications have been published in indexed and referenced editions in Scopus and Web of Science. Ass. Prof. B. Prodanov demonstrates erudition and remarkable ability to work in large teams, which include scientists with expertise in other scientific fields (most often biology and ecology), and to achieve complex, important, and practical results.

In conclusion, as a member of the scientific jury appointed by order of the Director of the Institute of Oceanology at the Bulgarian Academy of Sciences, I express the opinion that the candidate, Chief Assistant Professor Dr. Bogdan Prodanov, participating in the competition for the academic position of Associate Professor in the field of higher education: code 4. "Natural Sciences, Mathematics and Informatics"; Professional field: code 4.4. "Earth Sciences"; Scientific specialty: "Geology of Oceans and Seas"; Scientific field: "Geological–geomorphological mapping and monitoring of the coastal zone", announced in the State Gazette, Issue No. 63 / 01.08.2025, meets the mandatory and specific requirements and scientific criteria for occupying the academic position. I call upon the members of the scientific jury to vote in favor.

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