

REVIEW

concerning materials submitted for participation in competition for awarding the academic position of "Associate professor" in professional field 5.5. Transport, navigation and aviation, the academic course on "Biodiversity Conservation" at the Department of "Ecology and Environmental Protection" of Shipbuilding Faculty, TU – Varna announced by TU-Varna in the Bulgarian State Gazette No. 65 of 06.08.2021

with candidate: **Chief Assist. Professor Stoyan Ivanov Vergiev, PhD.**

Reviewer, Member of the Scientific Jury: **Assoc. Prof. Eng. Anna Kostadinova Simeonova, PhD., TU- Varna**

1. General provisions and biographical data

The only candidate admitted to the competition for the academic position "Associate Professor" in professional field 5.5. Transport, navigation and aviation, academic course "Biodiversity Conservation" is Chief Assistant Professor Stoyan Ivanov Vergiev, PhD. In brief, Stoyan Vergiev was born in 1979. In 2002 he graduated from the Technical University of Varna, Bachelor's degree, majoring in "Ecology and Environmental Protection". In 2003 he completed a master's degree at the Technical University of Varna in the same specialty. From January 2018 until now he holds the academic position of Chief Assistant Professor at the Dept. "Plant Production" (02.01.2018 - 21.05.2018) and Dept. "Ecology and Environmental Protection" (May 22, 2018 - until now) at the Technical University - Varna.

In 2014 he was awarded the educational and scientific degree "Doctor" after defending a dissertation on the topic "Palaeoecology and geoarchaeology of upper Pleistocene and Holocene sediments from the Black Sea deep water zone and the Varna Lake" at the Dept. of Marine Geology and Archeology, Institute of Oceanology "Prof. Fr. Nansen" – Varna, Bulgarian Academy of Sciences

2. General description of the submitted materials

In the application package submitted for participation in the current competition, a list of 31 publications are provided, grouped as follows:

- **13 scientific publications** in journals referred and indexed in world-famous databases of scientific information. All publications are indexed in Scopus / WoS, 5 of them with IF. (Publications №: B4.1, B4.2, B4.3, B4.4, B4.5, B4.6, B4.7, B4.8, B4.9, B4.10, B4.12, B4.13)
- **16 scientific publications** in unreferred journals with scientific review or

in edited collective volumes, of which:

✓ 9 publications in international journals (Г8.2, Г8.3, Г8.4, Г8.5, Г8.11, Г8.12, Г8.13, Г8.15, Г8.16);

✓ 7 publications in proceedings of international scientific forums (Г8.1, Г8.6, Г8.7, Г8.8, Г8.9, Г8.10, Г8.14)

- **1** published book based on the dissertation for "Doctor" degree (Г6.1)
- **1** published chapter of a collective monograph (Г9.1)

Of the presented publications - 22 are in English and the remaining 9 in Bulgarian. From all publications 14 pcs. are independent, with one co-author are 8 pcs., with two co-authors - 1 pcs., with three and more - 8 pcs.

In the predominant number of articles in international journals indexed in world-famous databases and in unreferred journals with scientific review, he is the leading author. **All presented publications are relevant to the topic of the competition.** As can be seen from the presented materials, Stoyan Vergiev has a high publishing activity in the scientific field of the competition "Biodiversity conservation".

For the period after being awarded of the scientific degree "Doctor", an impressive number of citations of the scientific publications have been reported (82), as the Scopus / WoS database shows 39 citations. This is confirmed by the high h index of the candidate- **5 h index**.

3. General characteristics of the applicant's research and applied research activities

The presented scientific work of Stoyan Vergiev, PhD are significant and relevant to the scientific and environmental practices. Based on the topics of the publications, it is evident that his scientific interest is concentrated in the following areas:

I. Study of the modern flora and vegetation of the Bulgarian Black Sea coast and Northeastern Bulgaria

In this series, a study of habitats and GIS mapping of the distribution of plant species with conservation status and medicinal and aromatic plants is made; GIS models for identification, assessment and prioritization of areas of conservation importance are developed; assessment and prioritization of existing protected natural areas and protected areas, etc. are made. (Г8.1, Г8.2, Г8.3, Г8.4, Г8.6, Г8.7, Г8.10, Г8.11, Г8.12, Г8.13, Г8.15, Г8.16)

II. Preservation of sand habitats, dunes and coastal areas and minimization of the impact of floods and erosion

The publications in this thematic area indicate: GIS modeling for assessing the effects of floods and erosion as a result of marine impact and storm phenomena on biodiversity on the Bulgarian Black Sea coast (B4.5, B4.6, B4.7, B4.8, Г8.4); determining the resilience of marine flooding of plant species in case of sea floods (B4.1, B4.5, B4.6, B4.7, B4.8, Г8.4); establishing the capacity of plant species as dune stabilizers (B4.1, B4.2, B4.3, B4.4, B4.5, Г8.5, Г8.8).

III. Evolution of biodiversity along the Bulgarian Black Sea coast

In a series of publications the candidate has followed the changes and

trends in the distribution of natural vegetation along the Bulgarian coast as a result of human influence. (B4.9, B4.10, B4.11, B4.12, B4.13, Г6.1, Г9.1).

IV. Climate change and its impact on vegetation and pollen productivity

Significant and up-to-date for science and practice studies of the vegetation-pollen-climate relationship and the influence of adverse climatic phenomena on the habitats of the Black Sea coast have been made, reflected in 8 publications. (Г8.10, Г8.11, Г8.12, Г8.13, Г8.14, Г8.15).

The scientific contributions indicated by the applicant can be assigned to the following groups:

- proving with new means already existing scientific fields, problems, theories and hypotheses;
- creation of new classifications, methods, constructions, technologies;
- obtaining and proving new facts

4. Pedagogical qualification of the applicant

The pedagogical activity of the candidate started in 2018 till now in the Shipbuilding Faculty, Dept. of "Plant Production" and Dept. of "Ecology and Environmental Protection". His workload covers development and conducting lectures of 9 disciplines; laboratory work guidance of 10 disciplines and seminars of 7 disciplines. All lecture courses are related to the conservation of biological diversity and landscape.

Vergiev has developed and updated the curricula of 5 main disciplines that he teaches. He has actively participated in the supervision of students in 2 research projects funded by the state budget within the period 2018 - 2020, as well as for participation in a student scientific conference. He was the supervisor of 5 graduates, and the topics of the diploma works are related to landscape-ecological research and flood risk assessment in different regions of the country.

The candidate has a personal contribution to the improvement and renewal of the material base of the Dept. of "Ecology and Environmental Protection". As a leader of several projects financed by the state budget, funds have been attracted and modern equipment and systems have been purchased for student training and for conducting research activities.

5. Main scientific and applied-science contributions

The contributions in the scientific production of Stoyan Vergiev have been achieved in current areas, with important theoretical and scientific-applied value, and fully comply with the professional field and the discipline "Biodiversity Conservation" of the announced competition.

The goals and tasks in the presented scientific production of the candidate are clearly formulated and substantiated, good literary awareness is shown, representative objects or insufficiently studied substrates are selected, modern methods of analysis are applied, experimental data are interpreted competently and substantiated conclusions and recommendations are made.

The achieved contributions can be assigned to the following groups:

Methodological contributions

- GIS models have been developed for assessment of: plant biodiversity and classification of natural areas in terms of their conservation status; the overexploitation of the natural habitats of the medicinal plants; the consequences of floods and erosion as a result of marine impact and storm phenomena on the coastal plant communities on the Bulgarian Black Sea coast; the pollen-vegetation and pollen-climate relations, both in natural plant communities and in agrocenoses;
- An experimental methodology for establishing and evaluating the resilience of marine flooding of plant species through simulations of marine floods has been prepared;
- Critical Decomposition Time (CDT) indicator has been introduced to assess plant resilience.

Scientific contributions

- Original scientific data on phytodiversity and its current conservation status on the Bulgarian Black Sea coast and northeastern Bulgaria for 12 vegetation periods (2008 - 2020) have been obtained;
- The dynamics and changes in the territorial distribution of the vegetation as a result of the anthropogenic impact for the period 2008 - 2021 are traced;
- The capacity of the psammophytic plant species *Leymus racemosus* subsp. *Sabulosus*, *sandpiper* (*Ammophila arenaria*), *Colchicus* (*Carex colchica*), *Thinopyrum ponticum* and *Galilea mucronata*, as dunes stabilizers has been determined;
- Based on studies of several localities in northeastern Bulgaria, the presence of *Platybelodon* has been confirmed - a little-known pre-Turolian proboscis fauna of the country;
- It has been confirmed that the late glacial xerophytic grasslands dominated by *Artemisia* and *Chenopodiaceae* in the East Stara Planina coast were displaced by open oak forests in the early Holocene in response to the general trend of global warming.

Scientific and applied contributions

- GIS maps of the Black Sea coastal floristic region "hot spots" have been prepared for several vegetation periods and the identification and prioritization of the conservation significant areas has been carried out;
- Salinity tolerance of several psammophytic plant species under floods with Black Sea waters as a result of storm phenomena has been determined;
- Modern calibration sets containing pollen and climate data from 759 modern surface samples for the period 2009 - 2018 were prepared. The data were used to track annual variations in vegetation, pollen production and the influence of climatic factors;
- Vegetation maps have been prepared for 10 time windows in the area of Varna Lake, showing the trends in the distribution of natural vegetation and

the human influence on it;

- The changes in the vegetation on the Bulgarian coast as a result of the changes in the climate and the human influence are traced.

6. Significance of contributions to science and practice

In general, I highly appreciate the scientific and scientific-applied contributions of the candidate. His research has great scientific and applied value and public ecological and social significance for the protection of the environment, human health and quality of life. Evidence of the high value of the candidate's research work are the citations of the obtained results in a total of 82 literature sources, including 39 international scientific journals indexed by Scopus / WoS.

7. Personal impressions and opinion of the reviewer

The provided scientific production and the branches of the research work of Ph. D. Vergiev definitely outline the professional profile of his work in the academic course "Biodiversity Conservation". The most emblematic for his research are the studies on the consequences of floods and erosion as a result of marine impact and storm phenomena on the coastal plant communities on the Bulgarian Black Sea coast; determining the salinity tolerance of psammophytic plant species under Black Sea waters floods, their capacity as species that stabilize sand dunes; the preparation of modern calibration sets containing data for pollen and climate from 759 modern surface samples for the period 2009 - 2018.

Apart from being author's personal work, the contributions are related to proving with new means already existing scientific fields, problems, theories and hypotheses; creation of new classifications, methods, constructions, technologies; obtaining and proving new facts .

8. Research management skills (projects, research teams)

The candidate actively participates in significant national research programs. He is a leader of 2 research projects within the inherent research activity of TU-Varna, funded by the state budget, related to landscape and ecological research in the period 2018 - 2020 (No. 7/2020 "Creating a dynamic GIS model for landscape-ecological research through remote methods of the Dolnokamchi region" and No.11/2018 "Creation of a GIS model for assessment of the dependences pollen-vegetation and pollen-climate in agrocenoses").

Deserved attention should be paid to the participation of S. Vergiev in the research team of the bilateral Project "Comparative Paleoecology of Varna Lake (Bulgaria) and Lake Mamaia (Romania) - EGAL", funded by the Research Fund at the Ministry of education and science of the Republic of Bulgaria and the Research Fund of the Republic of Romania (2010-2012); Project "Innovative technologies for safe European shores in a changing climate - THESEUS", funded by the European Commission under the VII EU Framework Program (2010-2013); Earthtime EU Project (2010-2015), funded by the European Scientific Foundation; Project "The Black Sea-Mediterranean Corridor in the last 30,000

years: changes in sea level and human adaptation", funded by the International Geological Correlation Program (IGCP) of UNESCO (2005-2009). He has participated in 1 research of TU-Varna with the business for analysis and assessment of the state of biological diversity on the territory of the thermal power plant of "Veolia Energy Varna" EOOD.

Vergiev is a member of 2 editorial boards of international journals: Remote Sensing ISSN 2072-4292, with IF, indexed by Scopus and Web of Science and Ecology and Evolutionary Biology, ISSN Print: 2575-3789. He is a thematic editor of the international scientific journal Sustainability, ISSN 2071-1050, indexed by Scopus and Web of Science and a reviewer of a significant number of publications (51) in 7 international journals indexed by Scopus and WoS, 5 of which with IF.

9. Personal impressions

I know Ph. D. Vergiev from our joint work in the Dept. of Ecology and Environmental Protection, which gives me opportunity to say that he is a competent and respected professional and teacher, very precise and thorough in his work, with good organization, teamwork skills, tolerant, and tactful. He has a high potential for research work, which is evident from the quality of his scientific production.

10. Training of young scientific staff

Dr. Vergiev has supervised 5 diploma theses of students, which are entirely related to the academic course of the competition for "Associate Professor". In addition, he actively participated with methodological guidance in students course projects. He was a supervisor of a student, participating in the V Student Scientific Conference "Ecology and Environment", Shumen 21.04.2017, whose scientific research was published in a journal included in the National Reference List (NACID).

CONCLUSION

Summarizing the materials of the competition I can make the following conclusions:

- The pedagogical activity and the presented scientific production of Vergiev are related to the professional field and the academic course of the announced competition for "Associate Professor";
- The scientific content is relevant and significant, as a result of which new scientific facts have been obtained and important scientific, methodological and scientific-applied contributions have been identified, based on the results obtained by the candidate;
- The publishing activity is very high, as most of his researches have been published in scientific journals with high rating;
- His works have been evaluated by the international scientific community and evidence of this is the convincing number of citations by various authors;

- The candidate shows active pedagogical activity

Having in mind the above, I highly appreciate the overall activity of Stoyan Vergiev and I consider that he fully meets the qualitative and quantitative terms of the minimum national requirements for the academic position of "Associate Professor" according to the "Law on the Development of the Academic Staff in the Republic of Bulgaria" (LDASRB) and the regulations for its implementation as well as the regulations of TU-Varna.

I find it reasonable to recommend Chief Assistant Professor Stoyan Ivanov Vergiev Ph. D. to take the academic position of "Associate Professor" in the professional field 5.5. Transport, navigation and aviation, the academic course on "Biodiversity Conservation".

10.11. 2021

Reviewer:.....
/Assoc. Prof. eng. A. Simeonova, PhD/