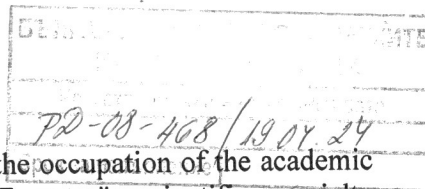


REVIEW



on the materials submitted for participation in the competition for the occupation of the academic position "Associate Professor" in the professional area 6.5 "Forestry", scientific specialty "Silviculture, incl. Dendrology", announced by the Forest Research Institute at the Bulgarian Academy of Sciences, State Gazette no.103/12.12.2023

Applicant for the position: Chief Assistant Dimitar Petrov Dimitrov, PhD

Member of Scientific Jury: Assoc. Prof. Ivaylo Velichkov Velichkov, Forest Research Institute at BAS, Sofia; field of higher education 6. Agricultural sciences and veterinary medicine, professional area 6.5. "Forestry", scientific specialty "Silviculture, incl. Dendrology", designated as a member of the scientific jury by order No. 15-59/12.02.2024 of the director of the FRI - BAS.

1. Brief biographical information.

Dimitar Petrov Dimitrov was born on April 20, 1975 in the city of Vidin.

In 2002 he graduated from the University of Forestry, Sofia, majoring in "Master - Engineer in Ecology, Protection and Restoration of the Natural Environment", defending a diploma thesis on the topic "Close to nature management of young beech stands on the northern slopes of the Central Stara Planina" with supervisor Assoc. Dr. Georgi Kostov (Department of "Silviculture").

In 2019 he obtained the educational and scientific degree "doctor", in professional area 6.5 "Forestry", scientific specialty "Silviculture, incl. Dendrology", as a doctoral student at the Forest Research Institute at BAS, defending a doctorate on the topic "Dendrochronological analysis of common beech forests (*Fagus sylvatica* L.) on the northern slopes of the Stara planina" with scientific consultants Prof. Ivan Raev and Assoc. Prof. Nadezhda Stoyanova.

From 15.05.2002 until now he works in the "Forest Ecology" section at the Forest Research Institute - BAS, initially as an assistant (2002-2010) and later as a chief assistant (2010-2024). In 2020-2021, he was acting as a head of the "Forest Ecology" section at the Forest Research Institute - BAS.

He specialized twice in the Netherlands: in 2005 in the ALTERRA institute on the topic "Modeling the dynamics of forest communities" with the head Prof. Kuhn Kramer and in 2006 at Wageningen University on "Methods in Dendrochronology" with Dr. Ute Sass-Klaassen as supervisor.

2. Conformity of the submitted documents and materials of the applicant with the minimum requirements, in accordance with the Regulations for the acquisition of scientific degrees and occupation of academic positions at the Forest Research Institute at the Bulgarian Academy of Sciences.

Presented materials meet the requirements. The "minimum required points by groups of indicators" achieved by the candidate exceed the values indicated in Table 1 to Appendix 1, Area 6. "Agrarian Sciences and Veterinary Medicine" from the "Rules for the Terms and Conditions for Acquisition of Scientific Degrees and for Occupation of Academic Positions at the Forest Research Institute at the Bulgarian Academy of Sciences". The total number of points achieved by the candidate is 665.1 points with a requirement of a total minimum number of 500 points.

3. General description of presented materials.

A total of 26 articles were submitted for participation in the competition, as follows, by groups of indicators: B4 – 10 in refereed and indexed editions chosen by the candidate as equivalent to a monograph, D7 – 9 also in referenced and indexed editions, G8 – 4 in non-refereed editions, and D11 – 3 chapters in a collective monograph.

The number of publications in refereed and indexed editions is 19, while three editions have been used. The most publications are in the Bulgarian journals "Forest Science" ("Nauka za gorata") (12 publications) and "Silva Balkanica" (6 publications), and one publication was printed in the Dutch journal with an "impact factor" - IAWA journal.

The number of publications in non-refereed journals is four - 1 in the journal "Forestry Ideas" and

3 publications in conference proceedings.

There are three published chapters in collective monographs - 2 chapters co-authored with Prof. Ivan Raev and one chapter co-authored with six other authors from abroad.

Of the total number of publications (26), 12 were published in English and 14 in Bulgarian.

Only two of the publications submitted for participation in the competition are in print, which represents 7.69% of the total number of 26, thus complying with the requirement of the "Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in IG - BAS": "works accepted for publication (with certificate) not to be more than 10% of the candidate's total output".

4. Basic directions in the applicant's research work and the most important scientific and applied scientific contributions.

The candidate has complied with the requirements of Art. 13, para. 5 of the "Regulations on the terms and conditions for acquiring scientific degrees and for holding academic positions in FRI - BAS", having submitted the required two references:

- the first one is the "Habilitation Extended Reference for Scientific Contributions" entitled "Climate Impact on Forests". The articles included in the habilitation reference are aimed both at the study of late-succession tree species, such as common beech (*Fagus sylvatica* L.) and common spruce (*Picea abies* (L.) Karst.), and early-succession (pioneer) species of the *Pinus* genus, such as black pine (*Pinus nigra* Arn.), Scots pine (*Pinus sylvestris* L.) and Macedonian pine (*Pinus peuce* Griseb). Four aspects of the studies are distinguished:

- study of the climate components in stationary conditions, in ecological stations of the Forest Research Institute - BAS: "Vasil Serafimov" and Govedartsi (Rila);
- study of the extreme climate events and their impact on the cambial activity and on the structure of the histological elements in the annual rings of woody plants;
- study on the influence of climate on forest communities within the growing season;
- impact of climate on forest communities in a perennial aspect.

Thirteen "main scientific contributions" have been formulated, some of which are:

- it has been proven that despite the increase in temperatures after 1994, the climate in northern Rila does not have a negative impact on the spruce forests;
- for the first time, the existence of frost rings in common beech (*Fagus sylvatica* L.) was proven for science (in Stara Planina);
- the influence of temperatures and precipitation within the growing season on the formation of annual rings (resp., increase in diameter) for the studied five tree species, listed above for the regions where they occur, has been proven;
- it was established that the global trend of increasing air temperatures does not lead to permanent growth depression in the beech forests in the Western and Central Stara Planina at altitudes from 630 m to 1490 m.

- the second one is "Reference for the most important scientific and scientific-applied contributions", which covers the candidate's work in three directions:

- ecological studies in protected forest areas;
- study of the influence of climate changes on forest hydrology;
- interdisciplinary studies.

Some of the contributions arising from the publications included in the second reference are:

- when analyzing data on average monthly air temperatures and monthly amounts of precipitation from ecological station "Vasil Serafimov" - Rila for a period of 45 years - from 1962 until 2007 it has been proven that, compared to the 60s, 70s and 80s of the 20th century, in the 90s of the 20th century and the beginning of the 21st century, the strength and intensity of climatic anomalies increases;
- it was established that the spruce forests on the northern slopes of the "Rila" National Park have a positive correlation with air temperatures and are slightly sensitive to the amount of precipitation;
- for the first time in the Bulgarian scientific literature, a combination of dendrochronological analysis and analysis of historical sources was applied in order to reconstruct past climatic events. Two unfavorable climatic periods have been established for the end of the 18th century - seven

consecutive dry years since 1780 to 1786, followed by four consecutive dry years from 1793 until 1796. Based on climatic data and historical information, periods with climatic anomalies for the end of the 19th and the beginning of the 20th century have also been defined.

5. Reflection of the candidate's scientific publications in literature.

The candidate has indicated 11 citations of his publications for participation in this competition, of which eight citations in scientific journals, referenced and indexed in world-famous scientific information databases, two citations in monographs and collective volumes with scientific review and one citation in non-referenced peer-reviewed journals. Provided citation materials meet the requirements.

6. Participation in scientific projects.

The candidate is a participant in four national projects: one project under "National Scientific Program "Protection of the Environment and Reduction of the Risk of Adverse Events and Natural Disasters" and three projects under the Scientific Research Fund, as all projects are financed by the Ministry of Education and Science.

7. Educational activity (supervisor / consultant of doctoral students, training of students, etc.)

In the submitted documentation for participation in the competition, no information was found regarding the candidate's educational and teaching activities.

8. Assessment of the applicant's personal contribution.

The publications submitted for participation in the competition (total 26 papers) are independent work of the candidate (6 papers); the candidate is first author (4 papers), second author (12 papers), third author (1 paper), fourth and next author (3 papers). The applicant's personal contribution to the publication activity can be determined as sufficient for the purposes of the competition and without any doubt.

9. Critical notes and recommendations.

Critical notes: from the 10 articles that formed the habilitation reference, 13 contributions were singled out, and from the remaining 16 articles, another 15 contributions were singled out, i.e. "main scientific contributions" are 28 in total. The way of listing the main scientific contributions (determined on the basis of the individual articles) makes it difficult to determine the most important of them, as is the requirement of point 4 of this review. Therefore, I ask the candidate himself to determine the most important, in his opinion, 5-6 in number of scientific contributions and present them at the final meeting of the scientific jury. Scientific and applied contributions are not indicated.

Recommendations: a possible increase in the number of publications in English in refereed foreign journals would have a beneficial effect on the candidate's scientific activity. I allow myself this recommendation due to the fact that 18 of the 26 publications submitted for participation in the competition (or 69%) are in the two journals published by the Forest Research Institute - BAS: "Forest Science" and "Silva Balkanica", and that 12 of the 26 submitted articles for participation in the competition were written in English and 14 in Bulgarian. An additional reason for such a recommendation is that of the 11 citations found, 6 (more than half) are due to the only article in the Dutch IAWA journal, which has an impact factor. The remaining five citations are to five separate articles, four of which are in English and only one in Bulgarian.

Questions:

- what are the prospects for two of the most important tree species in Bulgaria - Norway spruce and common beech? Both species in our country grow in the periphery of their distribution area, and according to the latest research with the participation of Dr. Dimitrov, they react differently to climate changes. Common beech has shown signs of better growth in diameter in recent years in Stara Planina (Dimitrov, Yaneva, 2024 - in press), not experiencing difficulties from rising

temperatures and not suffering from "growth depression", showing plasticity. Common spruce is apparently affected by "growth depression", since a project titled: "Study of the main factors leading to permanent growth depression of spruce forests in Bulgaria" is in the process of being implemented, led by Dr. Dimitrov;

- can the applicant formulate recommendations regarding the management of these species, taking into account their response to climate changes in recent decades?

- is it still valid what was established by Raev, Dimitrov (2006) that "spruce forests on the northern slopes of the Rila National Park have a positive correlation with air temperatures and are weakly sensitive to the amount of precipitation" and by Stoyanova et al. (2009) that "despite the increase in temperatures since 1994, the climate in Northern Rila does not have a negative impact on spruce forests"?

10. Personal impressions.

I know the candidate from our joint work at the Forest Research Institute - BAS, and I would allow myself to define him as a responsible and promising researcher and a correct colleague.

11. Conclusion.

In relation with the above mentioned, I recommend Chief Assistant Dimitar Petrov Dimitrov, PhD to be elected "Assistant Professor" in the professional field 6.5 "Forestry", scientific specialty "Silviculture, incl. Dendrology".

19.04.2024

Member of Scientific Jury:

/Assoc. Prof. I. Velichkov/