

REVIEW

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of the materials submitted for participation in a competition for the academic position of “**professor**” announced in the State Gazette, issue No. 45/3.06.2025 in the field 4.3. Biological Sciences, scientific specialty “Ecology and Ecosystem Conservation”, for the needs of the section “Biomonitoring and Ecological Risk”, department “Ecosystem Research, Ecological Risk and Conservation Biology” of the Institute of Biodiversity and Ecosystem Research (IBER) of the Bulgarian Academy of Sciences (BAS).

According to Order No. 70/01.08.2025 of the Director of IBER, BAS, I have been appointed as a member of the Scientific Jury for the announced academic position of “professor” at IBER at BAS.

1. General presentation of the received materials

➤ Contest participants

In the competition for the academic position of “professor”, announced in the State Gazette, issue No. 45/3.06.2025 for the needs of the “Biomonitoring and Ecological Risk” section, “Ecosystems department research, ecological risk and conservation biology”, scientific specialty “Ecology and ecosystem protection”, the only participant is Assoc. Prof. Dr. Mihaela Nikolova Nedyalkova from the section “Biomonitoring and ecological risk”, department “Ecosystem research, ecological risk and conservation biology” of the Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences.

➤ Documents submitted

The set of materials for participation in the competition submitted by Assoc. Prof. Dr. Nedyalkova is in accordance with the Law on the Competition for the Promotion of Research and Education in the Republic of Bulgaria. Among the documents submitted are: (i) an announcement of the competition in the State Gazette; (ii) a CV; (iii) diplomas for the acquisition of the scientific and educational degree “doctor” and the scientific title “associate professor”;

(iv) a statement of scientific contributions; (v) lists of scientific works, citations, participation in scientific events; (vi) copies of scientific works, as well as other materials allowing to assess her scientific research and pedagogical activity. Each of the attached lists and documents is prepared precisely - a fact that I assess as a serious attitude of the candidate towards the conduct of the competition.

Assoc. Prof. Dr. Nedyalkova has submitted for review scientific works outside the publications on the basis of which she defended her dissertation for the ONS “doctor”, as well as those from the previous habilitation for “associate professor”. 28 scientific publications have been submitted for participation in the current competition, of which 18 in journals with IF, 7 in journals with SJR and three book chapters. A list of noted citations of her works in journals with IF/SJR, the number of which is 136, is also attached. An abstract of a dissertation for the acquisition of the scientific and educational degree “doctor” by Petar Ostoich, in whose development Assoc. Prof. Nedyalkova was a co-supervisor, as well as information that she was a leader or participant in national and international research projects, is also submitted.

Assoc. Prof. Nedyalkova's participation in these research activities is certified by the relevant documents, which are attached to the review kit.

2. Brief biographical data of the candidate

The attached autobiography, in which each of the individual stages of Assoc. Prof. Nedyalkova's development is documented most conscientiously and informatively, makes it possible to trace her gradual passage through the various stages of scientific development and research activity, showing their upward development. She graduated in 1989 with a degree in “biology” from the Faculty of Biology of Sofia University “St. Kliment Ohridski” with a specialization in “ecology”. In the following years, she developed and defended a dissertation and acquired the ONS “doctor” in the field of “ecology and environmental protection”. From 2015 to the present, she has been an “associate professor” in the same specialty at the Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences. The main activity of Assoc. Prof. M. Nedyalkova is scientific research activity related to the development of projects, preparation of scientific publications, collection and processing of materials, and interpretation of the results obtained for participation in scientific conferences and workshops, etc.

3. Scientometric evaluation and scientific quality of the articles submitted by Assoc. Prof. Nedyalkova for participation in the competition

➤ *Scientometric assessment*

The review of Assoc. Prof. Nedyalkova's career growth and professional qualifications show that her research activity corresponds to the topics of the IBER at the Bulgarian Academy

of Sciences. Her scientometric data exceeds the requirements of the announced competition for the academic position of “professor” at the same institute, which are higher than those reflected in the Law on Academic Affairs of the Republic of Bulgaria and the high minimum requirements of the Bulgarian Academy of Sciences, established as a necessary condition for holding the academic position of “professor” at the Bulgarian Academy of Sciences.

A report on the compliance of the scientometric characteristics of Assoc. Prof. Dr. Mihaela Nikolova Nedyalkova in comparison with the required characteristics for “professor” at the Institute of Biodiversity and Ecosystem Research, by Bulgarian Academy of Sciences is presented in Table 1.

Table 1. Scientometric compliance of the candidate Assoc. Prof. M. Nedyalkova, for occupying the academic position of “professor” at the Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences according to the Regulations on the conditions and the procedure for acquiring scientific degrees and occupying academic positions at the Institute of Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences

	Publications	Journal publications with IF	Quotes	Journal citations with IF	PhD students defended their thesis	Project/package guide
Professor requirements	20 pcs.	10 pcs.	80 pcs.	40 pcs.	1 pc.	1 pc.
Candidate details	29 pcs.	19 pcs.	211 pcs.	136 pcs.	1 pc.	3 pcs.
% compliance	145	190	264	340	100	300

In all main indicators, Assoc. Prof. Nedyalkova 's data exceed the scientometric values required by the Regulations on the Conditions and the procedure for acquiring scientific degrees and holding academic positions at the Biodiversity and Ecosystem Research at the Bulgarian Academy of Sciences, concerning the holding of the academic position of “professor”.

➤ ***Assessment of the scientific quality of the submitted scientific publications, according to the quartile of the journal in which the scientific works were published***

The detailed analysis of the assessment of the scientific quality of the articles presented in the “Habilitation Thesis” section - scientific publications in journals that are referenced and indexed in the Web of Science and Scopus, revealed through the quartiles of the journals in which they were published - *one with Q 1 , one with Q 2, five with Q 3 and one with Q 4*, show that the presented main results of Assoc. Prof. Nedyalkova's scientific activity have been published in journals of relatively high scientific quality.

The assessment of scientific publications through the same indicator - quartile of the journal of publication of scientific work, reflected in the section “And beyond habilitation

work” - Scientific publications in publications that are referenced and indexed in the Web of Science and Scopus, is also evidence of the good performance of Assoc. Prof. Nedyalkova's publication activity. The following articles have been published in this section - *one with Q 1, two with Q 2, seven with Q 3 and twelve with Q 4* .

The total number of citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in the Web of Science and Scopus also reinforces the good impression of the research activity and its results, with which Assoc. Prof. Nedyalkova presents herself as a candidate in this competition.

4. Content, nature and contributions of the published results

The published results present systematized data and analyses, reflect their original nature and logical sequence, and contribute to expanding knowledge in the field of the scientific specialty “Ecology and Ecosystem Protection”.

➤ Contents

The published papers reflect the diversity of Assoc. Prof. Nedyalkova's research activities, mainly including research on the influence of environmental and anthropogenic factors on biota. The materials cover both theoretical developments and practically oriented research, aimed at a deeper understanding of biological processes and their application in nature conservation practice.

➤ Essence

The essence of the research conducted is characterized by clearly defined goals, a modern methodological basis and precise processing of empirical data. The approaches used are characterized by modern analytical techniques, which guarantees reliability and scientific validity of the obtained results.

➤ Contributions

The main contributions reflected in the scientific works correspond to:

- 1) proving the significance of the influence of anthropogenic factors on the health status of mammals;
- 2) providing results with direct practical value for environmental protection.

The scientific specialty “Ecology and Ecosystem Protection”, for which the competition has been opened, is a broad natural science field, including knowledge from at least three scientific disciplines: *Ecology* - science that studies the interactions between organisms and their environment. This also includes *Environmental Protection*, which is an applied field that uses ecological knowledge for sustainable management of natural resources. *Ecotoxicology*, a relatively young, but very important scientific discipline that lies on the border between ecology

and toxicology and serves as a bridge between them, providing multi-deterministic tools for assessing toxic impacts on biological systems, also falls within the scope of this specialty. Moreover, *Ecotoxicology* plays a key role in environmental management and policy-making, thanks to advanced methods in both scientific research and in the perception of environmental risk. This multi-layered structure of the scientific specialty “Ecology and Ecosystem Protection” also includes its very significant subdivision *Demekology*, who does it cover the study of the structure, dynamics, functioning, and development of populations as the basic units of organization in living nature.

Considering this broad aspect of scientific research, which is covered by the scientific field of the competition, it follows that the comprehensive evaluation of the scientific research work of Assoc. Prof. M. Nedyalkova should be carried out in the same direction. And this has been done through an analysis of the information presented below.

The core of the scientific activity of Assoc. Prof. Dr. Mihaela Nedyalkova is built mainly from scientific publications which, based on their content, essence and contributions of the published results, can be conditionally divided into four important areas of the scientific specialty “Ecology and Ecosystem Protection”.

The summarized review of the scientific contributions of Assoc. Prof. Nedyalkova, reflecting her many years of active research activity, implemented and examined in detail in various areas in the field of the discipline “Ecology and Ecosystem Protection”, allows for a clear tracking of the scientific value and specific contribution of each of her main publications to the development of the individual field, as well as its integrated influence on the development of the specialty as a whole.

Publications No. 1 and 8 contain original results from the assessment of oxidative stress caused by subchronic intoxication with heavy metals (lead and cadmium) or their combination in kidney and liver cells of laboratory white mice. **In Publications No. 1, 6 and 21** are included the results of a study of zeolite (natural clinoptilolite) as a nutritional supplement with a positive impact on the growth dynamics and general physiological condition of small rodents. **In publication No. 1** is presented evidence of the effectiveness of modified and activated zeolite (natural clinoptilolite) to reduce the bioaccumulation of cadmium in the body of laboratory white mice. **Publication No. 5** specifies the immunotoxic effect of lead and cadmium and the influence of modified clinoptilolite on leukopoiesis in laboratory white mice.

- The joint review of the results presented in these 5 articles: **Nos. 1, 5, 6, 8 and 21** shows successful research work and good scientific contributions in **the field of “Eco-toxicological research”**.

In Publications No. 3 and 26 cytogenetic changes and micronucleus formation in mammalian blood cells were assessed depending on the time of exposure to UV radiation. **In publications No. 2, 17 and 18** the genotoxic effect induced by prolonged exposure to low-frequency electromagnetic radiation was assessed by applying a micronucleus test in bone marrow cells of small rodents.

- The joint analysis of the results reflected in these 5 articles (**No. 2, 3, 17, 18 and 26**) builds the foundations of **the field “Biological Response to Radiation ”**

In publication No. 10, by applying serological markers for Lyssavirus circulation in cave bats in Vietnam, IgG-immunoreactivity to the glycoprotein of the virus was established and quantified in 80% of the bat species studied. **In publication No. 14** by studying the gut microbiome of the rusty wood vole (*Myodes glareolus*) and the common wood mouse (*Sylviaemus sylvaticus*) from the area of the village of Beli Iskar, Rila Mountain, the possible role of small rodents as carriers and spreaders of the African swine fever virus has been rejected.

- Based on the results obtained in the two publications **No. 10 and 14**, the direction **“Role of small mammals in the transmission of zoonotic diseases”** was formed.

In Publications No. 11 is presented detailed information on the species composition of the terrestrial fauna of Tsibar Island in the Danube River and the Ibisha Reserve. In **Publications No. 4 and 25** are noted the adaptive nature of habitat selection and biotopic attachment of small rodents in the Rila Mountains and Lozenska Mountains has been assessed.

- Based on the results obtained in the three publications **Nos. 4, 11 and 25**, the direction **“Faunal and Population Research”** is organized.

The review of the most significant summarized scientific production of Assoc. Prof. M. Nedyalkova thus presented allows me to verify that the topics of the four areas are correctly defined and the publications contained in them are of significant scientific value, and the information presented in the “Report on Scientific Contributions”, which I consider to be real and informative, reveals both the actual scientific activity that the candidate has carried out and the results published by him.

The joint detailed analysis of the results in the presented scientific publications highlights the significant scientific contributions of Assoc. Prof. Dr. Mihaela Nedyalkova in the field of ecology, ecotoxicology and environmental protection. They reflect results of both original and confirmatory nature. Insufficiently known phenomena have been outlined, new empirical data have been accumulated in poorly known scientific areas, information has been proposed that could be used in solving practical issues, etc. All these significant results have been achieved by Assoc. Prof. Dr. Mihaela Nedyalkova in collective work with colleagues from Bulgaria and abroad.

5. Personal contribution of the candidate

Assessing the personal contribution of the candidate to the achievement of the results presented for participation in the competition, I am convinced that in all these scientific studies Assoc. Prof. Dr. Mihaela Nedyalkova was a necessary, useful, and in many cases, a scientist who initiated the research. This conviction comes along the lines of the fact that in all the articles a well-defined niche of her presence is noticeable.

6. Scientific and pedagogical activity

The educational and pedagogical activity of Assoc. Prof. Nedyalkova is carried out through the supervision of a doctoral student in the field of scientific specialty “Ecology and Ecosystem Protection”, which has contributed to the popularization of this scientific field in the country and it should be expected that it will strengthen and acquire a more unambiguous character.

7. Personal impressions

I have personal impressions of the work of Assoc. Prof. M. Nedyalkova as a colleague from the Institute of Zoology of the Bulgarian Academy of Sciences. At every stage of her research activity, she has always shown a responsible attitude. Her work is distinguished by consistency, methodological precision and a critical approach to the analysis of the results. She approaches the planning, conduct and interpretation of the research with a high degree of professionalism, while at the same time demonstrating scientific correctness.

8. Recommendations

I recommend that Assoc. Prof. Nedyalkova, within the framework of her future scientific activity, develop in more detail the field of “*Demecology - structure and dynamics of populations*”, with a particular emphasis on mammals. In combination with her expanded ecotoxicological study, a more diverse nature of her scientific research in the field of vertebrate ecology will be ensured and additional opportunities will be opened for the popularization of her scientific activity in the Bulgaria and abroad.

CONCLUSION

After reviewing the materials and scientific papers submitted for participation in the competition, analyzing their significance and the scientific and applied scientific contributions contained therein, as well as scientific and pedagogical activity, I find it reasonable to give my positive assessment and to recommend to the esteemed Scientific Jury to prepare a report-proposal to the Scientific Council of the Institute of Biodiversity and Ecosystem Research of the Bulgarian Academy of Sciences for the election of Assoc. Prof. Dr. Mihaela Nikolova Nedyalkova to the academic position of “professor” in field 4.3. Biological Sciences, scientific specialty “Ecology and Ecosystem Conservation”.

26 September 2025

Reviewer:

/Prof. DSc Georgi Markov/