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## OPINION

on the materials submitted for participation in the competition for the academic position of “professor” in professional field 4.3 Biological Sciences, scientific specialty Ecology and Ecosystem Conservation, announced by the Forest Research Institute – BAS in the State Gazette, issue No. 18 of February 17, 2026.

**Candidate for the competition:** Assoc. Prof. Dr. Ina Josifova Aneva – IBER-BAS

**Prepared the opinion:** Prof. Dr. Rosen Todorov Tsonev, Department of Ecology and Environmental Protection, SU „St. Kliment Ohridski“, Faculty of Biology, Sofia.

### 1. Brief biographical sketch

Assoc. Prof. Dr. Ina Yosifova Aneva was born in Blagoevgrad town. In 2004, she graduated from the “Acad. Sergei P. Korolev” Natural Sciences and Mathematics High School in her hometown. Between 2004 and 2010, she studied for a bachelor’s degree in “Molecular Biology” and subsequently pursued a master’s degree in “Botany” at the Faculty of Biology of Sofia University “St. Kliment Ohridski.” In 2016, she defended her PhD thesis at the Institute of Biodiversity and Ecosystem Research (IBER) of the Bulgarian Academy of Sciences (BAS) on the topic “Biological and Phytochemical in situ and ex situ Study of *Sideritis* Species with Conservation Status in Bulgaria.” Even while studying at Sofia University “St. Kliment Ohridski,” she worked as a laboratory assistant at the “Acad. Rumen Tsanev” Institute of Molecular Biology, Neurogenetics Section. Since 2011, her professional career has been associated with the Institute of Biodiversity and Ecosystem Research – BAS, where she has held the positions of specialist biologist, assistant, senior assistant, and since December 20, 2019, associate professor. Assoc. Prof. Dr. Ina Aneva is also the scientific secretary of the “Biodiversity, Bioresources, and Ecology” division at the Bulgarian Academy of Sciences. Throughout her scientific career, she has received 12 awards - 8 national, including the “Pythagoras 2020” Grand Prize for Young Scientists and the “For Merit to the BAS” Honorary Medal 2024; 3 international, including UNESCO’s Man and the Biosphere (MAB) Young Scientists Award.

### 2. Compliance of the candidate’s submitted documents and materials with the minimum requirements, in accordance with the Regulations on the Awarding of Academic Degrees and the Appointment to Academic Positions at the Forest Research Institute – BAS.

The documents and materials submitted by Assoc. Prof. Dr. Ina Aneva meet the requirements of the Regulations on the Awarding of Academic Degrees and the Appointment to Academic Positions at the Forest Research Institute – BAS. The candidate’s scientometric indicators exceed the required minimum thresholds, and this applies to publications, citations, and research projects as well. The Commission for the Development of Academic Staff at the Forest Research Institute – BAS has issued a positive opinion on this matter. In terms of additional indicators, she has demonstrated teaching experience, participation in scientific forums in Bulgaria and abroad, and membership on the editorial boards of a number of authoritative journals..

### 3. General description of the materials presented.

In the documents submitted for the competition for the academic position of “Associate Professor,” candidate Assoc. Prof. Dr. Ina Aneva has summarized her research and project activities. The total number of points for which the candidate provides evidence is 3,881, with a required minimum of 660. They are distributed as follows:

Indicator Group B (habilitation thesis or equivalent number of points from publications in

peer-reviewed and indexed journals) – 254 points, with a required minimum of 100 points.

Group of indicators D (scientific publications in journals that are peer-reviewed and indexed in world-renowned scientific databases) – 782 points, with a minimum requirement of 200 points.

Group of indicators D (citations) – 1,600, with a minimum requirement of 120.

Group E indicators (project activity) – 783, with a minimum of 150.

Additional indicators (teaching activity, participation in editorial boards and scientific forums) – 412 points.

The habilitation report outlines the main research interests and achievements of Assoc. Prof. Dr. Ina Aneva. These are primarily focused on medicinal plants, their population and ecological characteristics, resource assessment of their habitats and sustainable use, specific features of the phytochemical composition of their populations, the importance of pollinators, and more. She has also studied the impact of land-use types on biological (primarily plant) diversity, the structure of plant communities depending on edaphic factors, the ethnobotanical characteristics of various regions in Bulgaria, and more. The habilitation report also includes taxonomic contributions (new species for Bulgaria and for the science), phytochemical studies (biologically active substances in various genera), and others.

I must note (this is discussed in more detail in the critical remarks) that some of the indicators in Sections B, G, and E, include publications and projects that, in my opinion, do not correspond to the scientific specialty “Ecology and Conservation of Ecosystems”, but are more relevant to the scientific specialty “Botany”. This, in my opinion, will lead to a reduction in some of the points presented by the candidate. Nevertheless, they are still above the required minimum, and this does not affect my final conclusion regarding the competition.

### **3. Main areas of the candidate’s research and their most significant scientific and applied scientific contributions.**

The research work of Assoc. Prof. Dr. Ina Aneva focuses on current and socially significant topics related to: elucidating the impact of environmental and anthropogenic factors on ecosystems; characterizing biochemical and genetic diversity as components of biological diversity; assessing the functional potential of plant metabolites; analyzing the toxicological and ecological effects of natural compounds, etc. The candidate’s contributions can be grouped as follows:

Studies on the effectiveness of green and blue infrastructure elements as a tool for maintaining biodiversity in agricultural ecosystems through the analysis of 115 plot sites in various agro-landscapes across Europe;

Studies of populations of valuable medicinal plant species, such as *Gentiana* spp., *Hyssopus officinalis*, *Rhodiola rosea*, *Hypericum* spp., *Nectaroscordum siculum* ssp. *bulgaricum*, *Alkanna tinctoria*, *Inula britannica*, *Arctostaphylos uva-ursi*, and others, as well as the dependence of certain phytochemical characteristics and features on the ecological characteristics of their habitats;

Studies on changes in land use and land cover conducted in the Kurram Valley (Kurram Valley) in northwestern Pakistan, in the province of Khyber Pakhtunkhwa, over a 27-year period, where a decline in natural ecosystems has been observed, replaced by anthropogenically created ones, specifically due to significant human impact;

Research related to the conservation and management of forest ecosystems. This includes an assessment of the genetic diversity of the genus *Tilia* (linden) in Bulgaria, as well as its conservation. This latter contribution is not included in the candidate’s list of contributions, but I believe the topic and the results obtained are important;

The herbicidal potential of essential oils from members of the *Lamiaceae* and

*Asteraceae* families has been evaluated through in vitro and in vivo experiments, demonstrating the applicability of plant metabolites as environmentally safe bioherbicides, e.g., in the biological control of competitors to cultivated plants;

Studies on the ethnobotanical use of 85 species of medicinal plants, with the results highlighting the importance of ethnobotanical data for the conservation of plant diversity in a given region and serving as a basis for future pharmacological research;

Some of Assoc. Prof. Dr. Ina Aneva's contributions are in the fields of taxonomy, phytochemistry, pharmacy, and healthcare, and cannot be considered part of the scientific discipline Ecology and Ecosystem Conservation. Nevertheless, the available contributions are sufficient to demonstrate that the candidate is a distinguished scholar with broad scientific interests and erudition.

#### **5. The Candidate's Scientific Publications in the Literature.**

Assoc. Prof. Dr. Ina Aneva is well known both in Bulgaria and abroad for her publications, which have received an impressive number of citations. For the period following her habilitation (2020–2025), 82 of her publications have been cited, yielding 803 citations, which earn her 1,600 points, because all the authors who cited her published in journals indexed in Web of Science and/or Scopus. This is a more than significant excess of the required minimum number. I must again emphasize that likely more than half of the citations are from journals in the field of phytochemistry and are for publications presenting scientific results in phytotherapy, pharmacy, biochemistry, medicine, food resources, and others. Of course, the very extensive list of citations in the field of ecology also significantly exceeds the required number of points for the scientific specialty relevant to the competition's theme. These citations are in journals with varying degrees of prominence in the fields of ecology, environmental protection, and sustainable development, such as the Bulgarian Journal of Agricultural Science, Plants, Flora Mediterranea, Biochemical Systematics and Ecology, Journal of Ethnopharmacology, NeoBiota, BioInvasions Records, Proceedings of the Bulgarian Academy of Sciences, International Journal of Environment and Climate Change, Biological Conservation, Agriculture, Ecosystems & Environment, Oecologia, Agronomy for Sustainable Development, Landscape Ecology, Global Ecology and Conservation, Acta Zoologica Bulgarica, Landscape and Urban Planning, Acta Societatis Botanicorum Poloniae, IOP Conference Series: Earth and Environmental Science, Plant Diversity, etc.

All citations of Assoc. Prof. Ina Aneva's publications are positive. They attest to the breadth of her research interests and the quality of her scholarly output.

#### **6. Participation in research projects.**

Assoc. Prof. Dr. Ina Aneva has participated in numerous projects, including those related to the scientific field covered by the competition. In my opinion, the relevant national scientific and educational projects are those numbered: 1, 2, 3, 8, 9, 10, 11, 14, and 15; and the relevant international scientific and educational projects are those numbered: 16, 17, 18, 20, and 21; and from the management of national scientific and educational projects: 23, 25, 26, and 27. In this case, the total number of points is not 783 but 493, which again significantly exceeds the required minimum of 150. The scientific projects in which Assoc. Prof. Dr. Ina Aneva has participated or led include those covering a wide variety of topics, such as the development of the green system in urban environments, the conservation of medicinal plant resources, the management plan for Rila National Park, mapping of plant species populations and natural habitats, the cultivation of medicinal plants to save their natural resources, the restoration of ecosystems in the Danube River basin, as well as of forest ecosystems and their adaptation to climate change, assessment of ecosystem services, etc. Assoc. Prof. Dr. Ina Aneva has secured nearly 1,000,000 leva for the BAS budget.

**7. Teaching and academic activities (supervisor/advisor to doctoral students, instruction of students, etc.)**

Teaching experience is an additional criterion according to the requirements of the Forest Research Institute – BAS. Here, however, it should be noted that Assoc. Prof. Dr. Ina Aneva has a wide-ranging and substantial teaching record, particularly for a researcher working at a BAS institute. In the 2019/2020 academic year, she conducted a large number of practical exercises (202 hours) in the disciplines of “Botany” and “Medical Botany” at the University of Forestry in Sofia, across various majors — Agronomy, Landscape Architecture, Veterinary Medicine, and Environmental Science. During the following academic year, she served as a tenured lecturer and taught the course in “Botany” at New Bulgarian University in Sofia. She also delivered a series of lectures at Aristotle University in Thessaloniki (Greece) under the ERASMUS program. These lectures covered biodiversity, the conservation and sustainable use of medicinal plants, their cultivation, and other related topics. Although this is an additional indicator, I highly value the role of Assoc. Prof. Dr. Ina Aneva as a scientist for whom continuity and the training of young people—as future bearers of scientific knowledge—are also important. Assoc. Prof. Dr. Ina Aneva served as a consultant (second academic advisor) to a doctoral student who successfully defended her dissertation—Boriana Traykova—in collaboration with Prof. Maria Stanilova from the Institute of Biogeochemistry and Environmental Research (IBER) at the Bulgarian Academy of Sciences (BAS).

**8. Assessment of the candidate's personal contribution.**

Assoc. Prof. Dr. Ina Aneva is the author of numerous publications covering a wide range of topics. The majority of these have been published in peer-reviewed and indexed journals of high international standing. In at least 11 of these, Assoc. Prof. Dr. Ina Aneva is the first author, and in all of these publications she participates in research teams that include both Bulgarian scientists and researchers from many different countries in Europe and around the world. Within these teams, she processes and supplements important data from Bulgaria, participates in various analyses, and contributes to the discussion of their results. Based on all of this, I believe that Assoc. Prof. Dr. Ina Aneva makes a very significant personal contribution, and in all the publications in which she participates, she has personally contributed to their scientific quality and significance.

**9. Critical comments and recommendations.**

My critical remarks, of course, do not concern the quality of Assoc. Prof. Dr. Ina Aneva's scientific output—which is beyond dispute—but rather the relevance of part of it to the scientific field of the competition: “Ecology and Ecosystem Conservation”. As I have already emphasized several times, many of the publications are more suitable for a scientific discipline with a broader scope, e.g., “Botany”, insofar as they are primarily in the field of phytochemistry or, more precisely - medicine, phytotherapy, pharmacy, biochemistry, etc. In this regard, I believe that in indicator group B, publications numbered 1, 4, 5, 6, 8, 10, 11, and 12 can be accepted as corresponding to the scientific specialty of the competition (some with a certain degree of conditionality). The final total is then 159 points, which is again significantly above the required minimum (100 points). In Group D of indicators, I consider that the publications relevant to the competition's topic (again, some with a degree of conditionality) are numbers 17, 25, 28, 29, 30, 31, 37, 41, 46, 47, 51, 52, and 56. Publication number 32 falls within the scientific field of the competition, but it has 35 authors and lacks the evidence of the candidate's personal contribution required by the law and the relevant regulations. In that case, the final point total would be 242, which is also significantly above the required minimum of 200. Such recalculations should also be

performed for the citations, but there are a very large number of them, and the required point total is certainly significantly exceeded.

I also have a critical comment regarding Publication No. 8 in Indicator Group B. Although it has undergone a rigorous peer-review process, I would nevertheless note that the title "Floristic and habitat diversity in representative grassland communities..." does not adhere to the hierarchical subordination in beta biodiversity ( $\beta$ -diversity). Natural habitats are a broader concept than a plant community (phytocoenosis). Although there is no precise definition in the literature, a natural habitat is more of a synonym for a biocenosis, together with the physical-geographical environment or biotope it occupies. Therefore, it is more accurate to speak of the diversity of plant communities within natural habitats (habitats) rather than the opposite one. The text of the publication also contains some problematic points, which I will not address within the scope of this opinion.

Finally, I would like to make a recommendation to the candidate. According to my calculations, 10 of her publications appear in journals published by the international publisher MDPI. Although publishing in these journals has many advantages, in recent years the international scientific community's critical stance toward this publisher has grown significantly. Many of its journals have been classified as "predatory journals" (see Oviedo-García 2021). Significant shortcomings of the publishing group include the formal peer-review process, the significant number of self-citations, including in other journals from the publisher, the very high article processing charges, and others. For this reason, an increasing number of countries (Norway, Germany, the Czech Republic, Hungary, and others) do not encourage publication (it does not contribute positively to academic advancement) in many of the journals published by this publisher. Finally, of course, I emphasize that every scholar's publication strategy is, above all, a matter of personal choice.

#### **10. Personal impressions.**

I have known Assoc. Prof. Dr. Ina Aneva for a long time, having briefly served as her teacher in the course "Ecology and Environmental Protection." However, I cannot claim to have any in-depth personal observations or impressions of her and her scientific career, as I have not yet had the opportunity to work with her on scientific topics or on any research or applied projects. My impressions are rather indirect, but they portray her as a very active, ambitious young scientist with diverse scientific interests. In addition to the purely scientific sphere, she also serves as an administrator, whose work is clearly viewed positively by the leadership of the Bulgarian Academy of Sciences.

#### **11. Conclusion.**

Notwithstanding the critical comments made regarding the above, I strongly recommend that Assoc. Prof. Ina Yosifova Aneva, Ph.D., be appointed to the rank of "professor" in the professional field 4.3 Biological Sciences, scientific specialty Ecology and Ecosystem Conservation.

Date

Member of Scientific Council:

Prof. Dr. Rosen Tsonev