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REVIEW

in connection with the competition for the academic position of Associate Professor in professional field 4.3. Biological sciences, scientific speciality "Ecology and ecosystems conservation", for the needs of the Section of "Community ecology and conservation biology", Department of "Ecosystem studies, environmental risk and conservation biology", Institute of Biodiversity and Ecosystem Research (IBER), Bulgarian Academy of Sciences (BAS).

Candidate: *Emilia Dimitrova Vacheva, PhD*

Reviewer: **Assoc. Prof. Ivelin Aldinov Mollov, PhD**, University of Plovdiv "Paisii Hilendarski", Faculty of Biology, Department of Ecology and Environmental Conservation, member of the Scientific Jury for the appointment to the academic position of Associate Professor, pursuant to Order No. 42/28 September 2026, issued by the Director of IBER-BAS.

Only one candidate, Emilia Dimitrova Vacheva, PhD, has applied for the announced competition for the academic position of Associate Professor in Professional field 4.3. Biological sciences, scientific speciality "Ecology and ecosystems conservation", for the needs of the Section of "Community ecology and conservation biology", Department of "Ecosystem studies, environmental risk and conservation biology", IBER-BAS. The competition was announced in State Gazette No. 69 of 31 July 2026.

The documents submitted by Emilia Dimitrova Vacheva demonstrate that the procedure for initiating and announcing the competition has been duly followed and that the submitted documentation complies with the requirements of the Academic Staff Development Act in the Republic of Bulgaria and its implementing regulations, as well as with the Regulations on the conditions and procedure for the acquisition of academic degrees and for appointment to academic positions at the Bulgarian Academy of Sciences and the corresponding Regulations of the Institute of biodiversity and ecosystem research (IBER-BAS).

1. General information on the candidate's career and research development

Emilia Dimitrova Vacheva was born on 2 December 1989 in the town of Montana, Bulgaria. She obtained her Bachelor's degree in "Biology" in 2012 from the Faculty of Biology at Sofia University "St. Kliment Ohridski", followed by a Master's degree in "Vertebrate Zoology" from the same university in 2014. In 2018, she defended the educational and scientific degree of "Doctor"

(PhD) in Professional field 4.3. Biological sciences, scientific speciality “Vertebrate zoology”, at the National Museum of Natural History, Bulgarian Academy of Sciences (BAS).

Between 2019 and 2021, she worked at the same institution as a Researcher. In 2021, she was appointed as Assistant Professor at the Institute of Biodiversity and Ecosystem Research, BAS, and in 2022, she was elected to the academic position of Chief Assistant Professor.

Dr. Emilia Vacheva is an established researcher in the fields of zoology and ecology, with 12 years of experience in scientific research at the Institute of Biodiversity and Ecosystem Research, BAS, and the National Museum of Natural History, BAS. She has participated in ten research projects focusing primarily on herpetology, conservation biology, and the ecology of amphibians and reptiles. She is the author and co-author of more than 40 publications in peer-reviewed scientific journals, including journals with high impact factor.

She has an excellent command of English and outstanding proficiency in the use of statistical and GIS software. She has extensive experience in field research and has participated in numerous national and international scientific conferences and forums. She also demonstrates strong organisational and communication skills, complemented by a consistent record of academic and professional development.

2. Scientometric indicators and significance of the results obtained

In the present competition, the candidate has submitted 31 scientific publications, excluding those included in her doctoral dissertation. All submitted publications have appeared in specialised scientific journals and fall within the scope of the scientific speciality “Ecology and ecosystems conservation”. Of these publications, 18 have appeared in journals with an Impact Factor (IF), while the remaining 13 are indexed in journals with a Scimago Journal Rank (SJR). Thus, the candidate meets and exceeds both the national minimum requirements and those stipulated in the Regulations on the conditions and procedure for the acquisition of academic degrees and for appointment to academic positions at IBER-BAS.

The assessment of Dr. Emilia Dimitrova Vacheva’s compliance with the minimum scientometric requirements for appointment to the academic position of Associate Professor has been prepared in accordance with the applicable regulations.

The fulfilment of the minimum national requirements for appointment to the academic position of Associate Professor, according to the relevant indicators, is as follows:

- Indicator Group “A” is fulfilled through the successfully defended doctoral dissertation, which carries 50 points.

- Indicator Group “B” is fulfilled with a total of 145 points, compared with the 100 points required under the national regulations.

This group includes 10 publications in scientific journals assigned to the following quartiles for the respective years of publication: Q2 – 3 publications; Q3 – 3 publications; and 4 publications indexed only in SJR. The candidate is the leading author of 8 of these publications.

- Indicator Group “G” is fulfilled with a total of 229 points, compared with the 200 points required under the Academic Staff Development Act in the Republic of Bulgaria and the 220 points required under the BAS regulations, which impose higher requirements than the national minimum for this indicator.

The candidate has included 21 publications in this group, distributed as follows: Q1 – 3; Q2 – 1; Q3 – 6; Q4 – 2; and SJR-indexed publications – 9. Twenty of these publications were co-authored with leading researchers from Bulgaria and abroad, while in one publication (Q2), Dr. Vacheva is the first author.

It is also worth noting the relatively high proportion of publications in journals without an Impact Factor (i.e. journals indexed only with an SJR), which account for approximately 40% of the candidate’s total publications. Five of these publications appeared in “Historia Naturalis Bulgarica”, three in “Herpetology Notes”, two in “Applied Microbiology”, and one each in “Ecologica Montenegrina” and “Biharean Biologist”. Of the 31 publications submitted for the competition, 7 (22%) appeared in journals belonging to the first two quartiles (Q1 and Q2), which is a commendable proportion and reflects positively on the candidate’s research output.

- Indicator Group “D” is fulfilled with a total of 166 points, compared with the 50 points required under the Academic Staff Development Act in the Republic of Bulgaria and the 60 points required under the BAS regulations, which set a higher threshold than the national minimum for this indicator.

The candidate has presented a total of 83 citations of 24 of her publications, all of which have been cited in journals indexed in Scopus and Web of Science. This provides evidence of the scientific relevance of Dr. Vacheva’s research and the interest it has generated within the scientific community. Sixty-three of these citations are in journals with an Impact Factor, thereby also fulfilling the requirements stipulated in the IBER regulations (20 citations, at least 10 of which must be in journals with an Impact Factor).

A search of the Scopus database indicates that Dr. Vacheva has an h-index of 7, which is a good indicator of the relationship between her number of publications and their citation impact.

3. Main areas of research and most significant scientific contributions

In her contributions statement, Dr. Emilia Vacheva has classified her scientific contributions into the following research areas: (1) “Ecology and faunistics”, (2) “Genetic studies”, (3) “Karyological studies”, (4) “Chemical communication”, (5) “Gut microbiome”, and (6) “Pathology”. The candidate has formulated a total of 23 scientific contributions, derived from the publications submitted for the competition and falling within the scope of the announced scientific speciality.

Contributions in Group 1: “Ecology and faunistics”.

In the first group, the candidate presents 14 contributions concerning the ecology, seasonal and daily activity patterns, body and egg sizes, and microhabitat preferences of lizards belonging to the families Lacertidae and Scincidae in Bulgaria; the population ecology and new distribution records of the Northern Crested Newt (*Triturus cristatus*) and the Alpine Newt (*Ichthyosaura alpestris*); as well as new distribution data for the two species of water snakes (*Natrix natrix* and *N. tessellata*) and the invasive Red-eared Slider (*Trachemys scripta*) in Bulgaria.

The candidate has investigated the trophic niches of five lizard species (*Darevskia praticola, Lacerta viridis, Podarcis tauricus, P. muralis* and *Ablepharus kitaibelii*) and one newt species (*Triturus cristatus*) from several localities in Bulgaria. In addition, populations of the Northern Crested Newt (*T. cristatus*) at the southernmost limit of its range have been studied with regard to seasonal activity and sex ratio. In some of the investigated lizard species, cases of saurophagy (*D. praticola* and *L. viridis*) and keratophagy (*D. praticola, L. viridis, P. muralis* and *A. kitaibelii*) have been recorded for the first time. These studies essentially represent the first contemporary investigations into the trophic ecology of lizards in Bulgaria since the pioneering research conducted by Prof. Pavel Angelov, Prof. Blagoy Gruev, Assoc. Prof. Vasil Tomov and Assoc. Prof. Atanas Donev of the University of Plovdiv “Paisii Hilendarski” during the 1960s, 1970s and 1980s.

The candidate has also contributed to research on the thermal ecology of *Lacerta viridis, L. trilineata* and *L. agilis*, comparing body temperatures between males and females, as well as between sexually mature and immature individuals, and examining their relationships with air and substrate temperatures. Egg sizes and clutch size have also been documented in four female Balkan Green Lizards (*L. trilineata*) from the Struma River valley in southwestern Bulgaria.

Winter activity has been recorded in the Snake-eyed Lizard (*Ophisops elegans*) in the Eastern Rhodopes, while nocturnal activity has been documented in the Green Lizard (*L. viridis*) in the Eastern Rhodopes and the Kresna Gorge.

Cases of complete or partial melanism in L. viridis from various parts of Bulgaria, as well as complete melanism in the Common Lizard (*Zootoca vivipara*) from Vitosha Mountain, have been described. The candidate has also reported the largest Green Lizard (*L. viridis*) ever recorded throughout the species’ entire geographical range, from the Vratsa Balkan region.

Microhabitat preferences regarding grass vegetation height and density have been investigated in the Balkan subspecies of the Sand Lizard (*Lacerta agilis bosnica*) in three Bulgarian mountains.

The contributions concerning the distribution of amphibian and reptile species in Bulgaria include the identification of a new locality of the Alpine Newt (*Ichthyosaura alpestris*) in the Rui Mountain area, as well as new distribution data for the Northern Crested Newt (*T. cristatus*) in Bulgaria. These data indicate that the species has a considerably wider distribution than previously assumed, extending across the entire northwestern part of the country. The candidate has also participated in the nationwide mapping of the distribution of both water snake species belonging to the genus Natrix in Bulgaria, as well as in updating the distribution data for the invasive Red-eared Slider (*Trachemys scripta*) in the country.

A contribution of particular conservation significance is the identification of three separate areas with the highest concentrations of terrestrial reptile species (*Testudo graeca, T. hermanni, Elaphe quatuorlineata* and *Zamenis situla*) within the "Kresna-Ilindentsi" Protected Area. The research also identified a serious threat to these and other reptile species in the region, namely the high volume of vehicular traffic along the E79 international road.

Contributions in Group 2: "Genetic studies".

This group comprises two original contributions. The first concerns the investigation of the origin of Wall Lizard (*Podarcis muralis*) populations in Southeastern Europe (Bulgaria and Romania). The second focuses on the origin of the easternmost known population of the Erhard's Wall Lizard (*Podarcis erhardii*) in Bulgaria, based on mitochondrial DNA analysis.

Contributions in Group 3: "Karyological studies".

In this group, the candidate presents one contribution. Chromosomal variation in species of the genus *Anguis* and one species of the genus *Pseudopus* has been investigated using conventional and molecular cytogenetic methods, with the aim of elucidating the phylogenetic relationships within the clade Anguiformes.

Contributions in Group 4: "Chemical communication".

This group comprises three contributions, all concerning skin secretions in snakes. For the first time, the chemical composition of the skin secretions of the Nose-horned Viper (*Vipera ammodytes*) has been investigated. Behavioural experiments have also been conducted to determine whether the compounds identified in the skin secretions of this species are involved in pheromonal communication. In addition, the chemical composition of skin secretions has been characterised in 13 snake species from Europe, North Africa and Western Asia.

Contributions in Group 5: "Gut microbiome"

This group comprises two contributions. The gut microbiome of a community consisting of five syntopic lizard species has been investigated through sequencing of a fragment of the 16S rRNA gene. Furthermore, the cloacal microbiome of five lizard species and two turtle species from the Bulgarian herpetofauna has been characterised through the isolation and identification of Gram-negative and Gram-positive bacteria.

Contributions in Group 6: “Pathology”.

This group includes one contribution, describing a case of pathological swelling of the body and head in Buresh's Crested Newt (*Triturus ivanbureschi*).

I accept all the scientific contributions presented by the candidate and consider them original.

4. The candidate’s scientific profile and professional skills

Based on the information presented above, it is evident that Dr. Emilia Vacheva has developed a well-defined and clearly established scientific profile in the field of herpetology. Her primary research interests focus on herpetology, particularly the biology and ecology of lizards belonging to the family Lacertidae and their behaviour in natural habitats, as well as ecological and faunistic studies of amphibians and reptiles in Bulgaria.

The candidate demonstrates extensive knowledge in herpetology, outstanding field and laboratory research skills, and a strong ability to work as part of a team. The latter is particularly important, given that contemporary herpetological research increasingly requires collaborative efforts and cannot realistically be carried out by a single researcher. She skilfully applies modern research methods, further demonstrating her excellent professional qualifications and scientific expertise.

5. Questions and Recommendations

I have no specific questions or recommendations for the candidate. In my opinion, Dr. Emilia Vacheva has successfully established herself as a young researcher in the fields of herpetology and the ecology of amphibians and reptiles. She works effectively in collaboration with other well-established specialists in these fields, both in Bulgaria and internationally. Her research is well recognised and positively received within the scientific community.

Conclusion

The candidate, Dr. Emilia Dimitrova Vacheva, meets and exceeds all scientometric requirements for appointment to the academic position of Associate Professor, as stipulated in the Academic Staff Development Act in the Republic of Bulgaria and its implementing regulations, as well as in the Regulations on the conditions and procedure for the acquisition of academic degrees and for appointment to academic positions at the Bulgarian Academy of Sciences and the corresponding Regulations of the Institute of Biodiversity and Ecosystem Research (IBER-BAS).

I do not know the candidate personally; therefore, my assessment of her work is based exclusively on the materials submitted for the competition. I can confidently state that Dr. Emilia Dimitrova Vacheva has established herself as a recognised scientist with a clearly defined research profile and demonstrated scientific and applied research contributions. Her expertise and commitment to research place her among the leading herpetologists in Bulgaria.

On the basis of the above, I confidently give my **POSITIVE assessmen**t of her work and recommend that the esteemed Scientific Council of IBER-BAS elect Dr. Emilia Dimitrova Vacheva to the academic position of Associate Professor in Professional field 4.3. Biological sciences, scientific speciality "Ecology and ecosystems conservation", for the needs of the Section of "Community ecology and conservation biology", Department of "Ecosystem studies, environmental risk and conservation biology", at IBER-BAS.

Reviewer: .....

(Assoc. Prof. Ivelin Mollov, Phd)

Date: 18.11.2026.