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STATEMENT

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Subject: *The materials submitted for the competition for the academic position* ***of Associate Professor*** *at the Institute of Biodiversity and Ecosystem Studies, BAS, in the field of higher education 4.3 "Biological Sciences", subject area: "Zoology" for the needs of the Section "Community Ecology and Conservation Biology" at the Department "Ecosystem Research, Ecological Risk and Conservation Biology" of IBEI-BAS.*

1. **General presentation of the procedure and the applicant**

In the "Associate Professor" competition, announced in the State Gazette, issue 66 of 06.08. 2024 for the needs of the Section "Community Ecology and Conservation Biology" at the Department "Ecosystem Research, Ecological Risk and Conservation Biology", the sole candidate was **Dr. Heliana Dundarova** from the Section "Community Ecology and Conservation Biology" at the Department "Ecosystem Research, Ecological Risk and Conservation Biology" at the Institute of Biodiversity and Ecosystem Research at BAS. The documents submitted by the candidate have been prepared according to the requirements of the Academic Staff Development Act in the Republic of Bulgaria (ASDARB) and the IBEI criteria for the academic position of Associate Professor.

In the context of the competition, the candidate presented a total of 23 scientific papers. A total of 17 papers (94%) have an Impact Factor ranging from 0.354 to 3.95. Two papers have only SJR, and four are not refereed and indexed in the Web of Science and Scopus databases. Eight articles are classified as Q1, three as Q2, one as Q3, and three as Q4. They have been published in reputable scientific journals, including *Virulence, Frontiers in Veterinary Science, Pathogens, and Animals*. Of the 23 articles submitted to the competition, the candidate is the first author in 9 (39%) and the second in 3 (13%), demonstrating that Dr. Dundarova has contributed significantly to half of the scientific papers in question. Dr. Dundarova's scientific output has been acknowledged by the international scientific community, as evidenced by a total of 97 citations, with an overall h-factor of 5 (https://www.scopus.com/authid/detail.uri?authorId=55418579900). Of the 43 citations submitted for the competition, 38 (88%) were in journals with an impact factor, five were in the Handbook of the Mammals of Europe, and one was in an unrefereed journal.

The candidate's scientific metrics comply with the minimum requirements outlined in Article 26 of the Academic Staff Development Act in the Republic of Bulgaria and the Regulations on the Conditions and Procedures for the Acquisition of Scientific Degrees and Titles and for

Holding Academic Positions at BAS (2018). Moreover, they exceed these minimum requirements: Indicator A: 50 points out of 50 points, Indicator C: 127 points out of 100 points, Indicator D: 239 points out of 220 points, Indicator E: 76 points out of 60 points.

A notable record of project activity and active participation in national and international expeditions and scientific research forums accompanies the candidate's scientific output. Dr. Dundarova has participated in ten scientific projects, seven of which were international in scope. She has led three of these projects and acted as an expert in the others. Additionally, Dr. Dundarova has led two projects in collaboration with the National Science Foundation. She has participated in eight international and two national scientific forums. The candidate has participated in six expeditions, five of which were international in scope and took place in Albania, Iran, Laos, Kosovo and China.

The aforementioned scientific-metric indicators serve to substantiate significant conclusions. Dr. Dundarova is an esteemed expert in bat research, a group of mammals of considerable conservation importance. She has a diverse, comprehensive, and thoroughly satisfying scientific activity, which aligns with the requirements for the position of associate professor. Additionally, she is a renowned researcher nationally and internationally for her contributions to bat research, as evidenced by the substantial number of projects and citations of her research papers. The Bulgarian and international zoological communities hold her expertise in high regard, as evidenced by the number and quality of the scientific projects she participates in or leads.

A review of the documentation submitted after a detailed analysis suggests that Dr. Dundarova's overall scientific activity can be characterized as diverse and exhibits the requisite scientific-metric indicators.

2. **Evaluation of the candidate's scientific and applied activity**

The primary focus of the candidate's research activities is the study of taxonomy, faunistics, phylogeography, ecology and zoonoses of a significant group of mammals with conservation implications, such as bats. The candidate's principal scientific contributions can be summarised as follows:

- ✓ **Taxonomy, zoogeography and phylogeography** (Articles B1, B3, B5, B6, G3, G12, G13, G 14, G15)
- ➢ An investigation into the formation of contemporary distribution patterns among related taxa illustrates the potential of a multilocus phylogeographic approach. This example, which concerns the cryptic species of the morphogroup *Myotis mystacinus*, offers insight into historical population replacement.
- ➢ A cave with the highest species diversity of forest bat species at the highest altitude in Europe (Pirin, 2600 m above sea level) has been identified as a significant communication and breeding site. The efficacy of the methodology employed for recording and analyzing ultrasound signals to assess the diversity of bats in the alpine zone was substantiated. A total of 20 species of bats have been identified in the Banski Sukhodol Cirque, Pirin Mountain, representing over half of the Bulgarian bat fauna.

Several rare species have been identified within the Bulgarian and Asian bat faunas, including:

- The *Eptesicus nilssonii* species has been identified in Pirin Mountain, which represents a notable achievement in the field of zoological research;
- The *Pipistrellus nathusii* species has been observed in the exclusive economic zone of Bulgaria in the Black Sea, situated at a distance of 100 km from the coast;
- A breeding colony of *Rhinolophus lepidus* has been discovered in Kyrgyzstan for the first time, following a long period during which it was incorrectly identified as *R. hipposideros*. A proposal has been made to change the IUCN conservation status of *R. hipposideros* from "Near Threatened" to "Vulnerable" for the Central Asian region;
- The Turkestan long-eared bat (*Otonycteris leucophaea*) (Severtsov, 1873), infrequently documented in southern Kazakhstan, and the IUCN Red List lacks pertinent data regarding its distribution and population status, has been registered.

✓ **The role of cave-dwelling bat species as vectors and reservoirs of European rabies viruses (Lyssaviruses) (**papers B2, B4 and D11**)**

➢ A new hypothesis has been put forth regarding the potential spread of lyssaviruses of phylogroup II in Europe. This hypothesis suggests that the virus may have spread through the contact zone between the Palearctic and Ethiopian zoogeographic areas.

➢ In a pioneering study in Bulgaria, antibodies against rabies have been identified in populations of cave-dwelling bat species using two ELISA kits. Moreover, the optimal period for detecting lyssavirus load in bats has been identified.

✓ **Analysis of the health status of bats by evaluating the prevalence and diversity of pathogens** (papers C3, D1, D4, D8).

➢ Ectoparasites

- The female, male and protonymph of *Spinturnix otonycterisi* Dundarova & Orlova, sp. nov. (Acari: Spinturnicidae) are described for the first time from specimens collected from the rarely captured Turkestan long-eared bat (*Otonycteris leucophaea*) (Severtsov, 1873) in southern Kazakhstan;
- Two new species of ectoparasites, *Spinturnix emarginata* and *S. nobleti*, have been identified in the territory of southern Kazakhstan;
- The ectoparasite *Spinturnix myoti* has been identified as the dominant species in the bat fauna of Bulgaria, with specimens collected from nearly all sites and bat species;

➢ Trypanosomes

- The prevalence of trypanosome pathogenicity in bats in Bulgaria, Poland and the Czech Republic was identified and assessed;

➢ The geographical distribution of white-nose mold (caused by *Pseudogymnoascus destructans*) on hibernating bats was analyzed and modeled.

- ✓ **Preparation of cell cultures from different bat tissues** (papers D2, D9)
- ➢ derived from macrophages of *Myotis myotis;*
- ➢ derived from the cells of the kidneys and liver, as well as the nervus olfactorius, of four distinct bat species.

- ✓ **Ecological conservation studies of bat fauna in subterranean habitats** (papers B15, D14)
- ➢ In pioneering research outside the tropics, bats' abundance and species diversity have been assessed, and priority subterranean habitats for conservation in southwestern Kyrgyzstan have been identified using the Cave Vulnerability Index (BCVI).

3. **Summary comments and personal impressions**

The analysis of Dr. Dundarova's professional development reveals that she has established herself as a researcher with a well-defined profile and extensive qualifications, which align perfectly with the subject matter of the announced competition for the "Associate Professor" position. The candidate's publication record, in terms of quantity and quality, meets the standards required for the position. The candidate's research activity is complex. She addresses significant issues in taxonomy, zoo- and phylogeography, conservation biology, ecology, and the conservation of bats, employing a multifaceted approach. My experience with Dr. Dundarova indicates that she is an active, purposeful, and constructive researcher. She has identified her niche in zoological research and is persistently striving to expand it by participating in scientific projects and collaborating with foreign scientists.

4. CONCLUSION

Based on my review of the submitted materials and scientific works, including an analysis of their significance and scientific and applied contributions, I conclude that a positive assessment is warranted and that the Scientific Jury should prepare a report proposal for the Scientific Council of IBEI, BAS Dr. Heliana Irdji Dundarova to be elected to the academic position of **Associate Professor** at IBEI, BAS in the professional field 4.3 Biological Sciences, scientific specialty "Zoology".

Sofia, 11.11.2024 Assoc. Prof. Tsenka Chassovnikarova, Ph.D.