

OPINION

on the materials of the announced competition on the academic position "Associate Professor", professional direction 4.3 "Biological Sciences", scientific specialty "Entomology", for the needs of research group "Fauna, Taxonomy and Ecology of Invertebrates", Department "Animal Diversity and Resources" to IBER-BAS, announced in State Gazette, no. 71/18/08/2023

Author: **Associate Professor Dr. Borislav Vasilev Georgiev** – National Museum of Natural History at BAS

In the announced competition, one candidate submitted documents – chief assistant Dr. Boyan Petrov Zlatkov. The presented set of documents is in accordance with the requirements of the Regulations for the Implementation of the LDASRB, the Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in BAS, and the relevant Regulations of the IBER-BAS.

Boyan Zlatkov graduated from higher education in 2005 at "St. Kliment Ohridski" majoring in "Biology" and majoring in "Entomology". In 2011, he acquired the ONS "doctor" in professional direction 4.3. Biological sciences, scientific specialty "Entomology" in the Faculty of Biology of the SU "St. Kliment Ohridski" (BF of US). Part of his work experience was spent at the Department of Zoology and Anthropology of the same university, where he held the position of biologist for 8 and a half years and subsequently worked as a curator of the zoological collection for about 2 years. The research experience, the acquired qualification in the BF of US and the conducted expeditions to the Balkan Peninsula, the Caucasus and Central Asia have greatly contributed to his successful development as a specialist entomologist - theoretician and practitioner. From October 2017 to the present, the candidate works at IBER-BAS as a chief assistant, where he conducts research and works on scientific and environmental projects.

Dr. Zlatkov is the author and co-author of a total of 47 publications, of which 4 are works presented for recognition of the doctoral degree. In the current competition, he participated with 43 scientific works, of which 28 are publications with Journal Impact Factor and/or SCImago Journal Rank, printed in journals, referred and indexed by the world-famous scientific information databases Web of Science and Scopus. The remaining 15 research papers are journal articles referred and indexed in other databases. Despite the request for a list of participation in scientific conferences in the applicant's CV, these are not documented. The citation inventory contains 40 citations, all of them in journals, referred and indexed in the aforementioned two databases of scientific information. The project activity of Dr. Zlatkov is also impressive. The candidate has participated or is

participating in a total of 23 projects (21 national and 2 international), 5 of which have a fundamental scientific focus.

Evaluation of the candidate's research activity

The presented report on the contributions fully and objectively reflects the research work of Dr. Boyan Zlatkov, which is characterized by methodicality and thoroughness. The report also includes contributions on habilitation work, which clearly outline the scientific profile of the candidate related to the study of fauna, taxonomy and morphology of butterflies from the family Tortricidae, as well as to the study of the anatomy and functional morphology of different groups of butterflies, applying classical, modern and innovative methods and techniques. The contributions outside the habilitation work cover a variety of topics, the main ones being taxonomic and faunal in relation to different groups of butterflies, as well as anatomical and functionally morphological concerning mostly the genitalia of vertebrates and invertebrates.

Some of the most significant and at the same time original scientific contributions of Dr. B. Zlatkov deserve to be mentioned:

- By applying a new approach – inflated endophallus, in addition to the traditional diagnostic marks of the external morphology of the allopatric alpine populations of *Phtheochroa frigidana* s.l. the existence of five (*P. schawerdae*, *P. alpinana*, *P. apenninana*, *P. frigidana* and *P. cantabrianana*) and not two species as three of them are new to science (publication 1.3);
- In order to establish the corresponding structures of the male and female genitalia of butterflies at the moment of copulation, the functioning of the internal musculature of the phallus was investigated. As a result: (1) muscle fiber attachment points are described and their putative function is discussed; (2) certain parts of the vesica of the phallus are found not to turn in the living state; (3) the methods of movement of the large diverticula of the everted bladder have been clarified; (4) a hypothetical position of the internal male and female genitalia during copulation is proposed (Article 1.5);
- Through morphological and molecular analyses, a revision of two trivial but taxonomically problematic Palearctic species of the genus *Clepsis*, *C. consimilana* auctt. and *C. neglectana* auctt. As a result, four species were revalidated (*C. acclivana*, *C. striolana*, *C. xylotoma* and *C. eatoniana*), another species was given full species status (*C. acclivana*) and two synonyms were established (publication 1.6);
- For the first time, copulating pairs of butterflies were studied in real time, by applying a variety of techniques (confocal laser scanning microscopy, scanning electron microscopy, histology). As a result of visualization using the method of microCT, a number of spatial interactions of the male and female genitalia, as well as the skeletal-muscular apparatus involved in the process, have been clarified (publication 1.8).

Profile of the research work

Chief assistant Zlatkov is a researcher with a well-defined scientific profile, permanently focused on the systematics, anatomy and functional morphology of insects of the family Tortricidae. He has made indisputable scientific contributions to the study of speciation and morphological differentiation of closely related allopatric taxa, based on careful study of specific genital characteristics and analysis of DNA sequence data. His ability to solve complex taxonomic problems is impressive and most often leads to the establishment of new scientific facts.

Personal impressions

I know chief assistant B. Zlatkov from the time when he was a specialist in BF of US, and even then I assessed him as a serious and motivated colleague who will develop successfully as a scientist. Over the years, he has established himself as an excellent researcher and a preferred partner in research teams. The works published by Dr. B. Zlatkov testify to his dedication to scientific research and precision in the implementation of the activities with which he is engaged.

Conclusion

The documents and materials presented by Dr. Boyan Zlatkov meet all the requirements of LDASRB, the Regulations for its implementation and the Regulations of IBER-BAS, cover and even exceed the requirements for the academic position "docent". Dr. Boyan Zlatkov is an experienced, erudite and conscientious researcher with clearly defined scientific topics. All this gives me the reason to announce my positive assessment and to recommend to the respected members of the Scientific Jury to vote for him to be awarded the academic position „docent“ in the professional field 4.3. Biological Sciences, scientific specialty „Entomology“.

Sofia

15.12.2023

Изготвил становището:

(доц. д-р Борислав Георгиев)