

REVIEW

By Prof. Nesho Hainrich Chipev, Institute of Biodiversity and Ecosystem Studies, BAS (retired), elected as a member of the Scientific Jury and appointed by Order No. RD-38-611/15.11.2022 of the Rector of the SU "St. Kliment Ohridski"

REGARDING: Competition for the occupation of the academic position "professor" in Professional direction 4.3. Biological Sciences (Ichthyology and Aquaculture) for the needs of the "General and Applied Hydrobiology" department, announced in SG no. 82 of 14.10.2022

In the announced competition, the only candidate is Assoc. prof. Eliza Petrova Uzunova PhD, who has submitted all the necessary documents in accordance with the requirements of the ADASRB (Act on Development of the Academic Staff in the Republic of Bulgaria), the Rules for the Implementation of the ACT, the Rules for the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions of Sofia University "St. Kliment Ohridski". The submitted competition documentation is structured and presented in a way that fully reflects the candidate's academic activity.

Brief biographical details of the applicant

Assoc. prof. Uzunova graduated from the Faculty of Biology of the Sofia University "St. Kliment Ohridski" as a master's degree with a specialization in "Fishery and Ichthyology" in 1994. There, in 2004, she obtained the scientific and educational degree "Doctor of Philosophy". Assoc. prof. Uzunova has almost 26 years of work experience at Sofia University, the majority of which are in an academic position. Her scientific career began in 1996 as an assistant in the Department of "General and Applied Hydrobiology", and in 2004 was appointed to the position of chief assistant. Since 2013, she holds the academic position of Associate professor in the same department. The candidate's career growth and professional qualifications fully correspond to the subject matter of the announced competition for a professorship in the Department of "General and Applied Hydrobiology".

Evaluation of the candidate's activity

Teaching and learning activity. Assoc. prof. Uzunova's teaching activity is significant, including the delivery of various lecture courses and practical classes for students from various specialties, bachelor's and master's studies at the Faculty of Biology of the SU. Assoc. prof. Uzunova leads the lecture courses in Hydrobiology, Aquaculture, Ichthyology and conservation of fish resources, Ichthyology and sustainable management of fish resources (436 hours), as well as practical exercises and teaching practices in hydrobiology and aquaculture (83 hours). Assoc. prof. Uzunova was the supervisor of 20 graduates who successfully defended their diplomas. She was also the supervisor of one doctoral student who defended and one doctoral student with the right to defend.

In conclusion, I can highly rate the overall teaching and learning activity of Assoc. prof. Eliza Uzunova, given its large volume and diversity.

Research activity. The main research profile of Assoc. prof. Eliza Uzunova is in the field of research on alien and invasive fish species, rare and endangered fish species, evaluation of river connectivity restoration approaches and aquaculture. They find expression in high publication activity and

the development of numerous research projects. Assoc. prof. Uzunova has a total of 72 publications (scientific articles, published conference reports, book chapters).

For participation in the current competition for a professor are presented 13 scientific articles in international scientific publications, referenced and indexed in WoS/SCOPUS, 2 books and 5 book chapters are submitted for participation in the current competition for a professorship. The articles are distributed by quartiles as follows: in Q2 – 5 articles, in Q3 – 5 articles, Q 4 – 3 articles. Assoc. prof. Uzunova is the first co-author in 7 of the 13 scientific articles submitted for the competition and in 5 book chapters, and in 3 articles she is the second co-author. There is a published non-thesis monograph as well as a university textbook, A Practical Guide to Exercises in Ichthyology. Co-authorship in scientific works shows close and fruitful cooperation with a number of colleagues, specialists in the field. Assoc. prof. Uzunova has also participated in 34 international and 14 national scientific conferences. Proof of the importance of the published studies of Assoc. prof. Uzunova is their citation. The candidate submitted a list of a total of 162 citations of scientific articles, the majority in publications referenced and indexed in Scopus and Web of Science, h-index: 8 (Scopus).

The reference on the fulfillment of the minimum national requirements by the applicant under Art. 2b of the ADASRB for scientific area 4. Natural sciences, mathematics and informatics; professional direction 4.3. Biological Sciences shows a range of points that cover and in most cases even exceed the required minimum number of points for the criteria:

Indicators	Criteria	Number of points	Minimum number of points
group A	dissertation work	50 p.	50 p.
group B	habilitation thesis	100 p.	100 p.
group G	scientific publications	346 p.	200 p.
group D	citations	324 p.	100 p.
group E	projects	557 p.	150 p.

The scientific researches of Assoc. prof. Eliza Uzunova are up-to-date and have significant scientific and scientifically applied value. The studies used modern and diverse methods of analysis. The review of the presented scientific works gives me reason to assume that the candidate's personal contribution to the research and its analysis is beyond doubt.

I accept the presented reference for the contributions of Assoc. prof. Uzunova's works, which are in several scientific directions: 1. Foreign and invasive species of hydrobionts; 2. Rare and endangered ichthyological species; 3. Approaches to ensure and restore river connectivity; 4. Aquaculture

Among the more significant scientific and scientific-applied contributions, according to the main scientific directions in which the candidate works, I would indicate the following:

1. Foreign and invasive species of hydrobionts.

In this scientific direction, in-depth research was conducted on foreign and invasive fish species in Bulgaria. For the first time, a naturalized population of North American largemouth bass *Micropterus salmoides* (Lacépède, 1802) was established in our country. The main characteristics of local populations of various alien and invasive species have been described and studied, and their adaptation characteristics have been evaluated according to the environmental conditions in their new habitats. In this regard, an identifier of 46 invasive alien animal species of importance for the EU has been prepared and published, containing information and original data for Bulgaria. A 32 language tool (software application) to support decision making on aquatic species invasiveness (AS-ISK) has also been developed.

2. Rare and endangered ichthyological species.

For the first time, research has been conducted and data on length-weight relationships (LWR), Fulton coefficient (K) and relative fitness factor (Krel) for major Danube sturgeon species have been presented. The food spectrum of four sturgeon species (*H. huso*, *A. ruthenus*, *A. stellatus* and *A. gueldenstaedtii*) was studied, which provides the first comparative data in over 50 years on the changes in the food spectrum of sturgeon fish in the Bulgarian section of the Danube. In these studies, for the first time in our country, a non-lethal and microinvasive approach was applied to the study of fish nutrition.

3. Approaches to ensure and restore river connectivity.

A detailed and in-depth analysis and assessment of the combined impacts of hydropower on ecosystems and the ecological state of rivers has been made. A package of mitigating measures to reduce the negative impact of hydropower plants on the environment has been developed, in which the measures are systematized according to the target group of significant impacts - fragmentation, hydropeaking, water quality, changes in the landscape. An objective methodology has been developed for an informed, transparent and objective assessment of the admissibility for the construction of new hydropower plants. As a result of scientific and practical research in the area, a comprehensive approach to restoring river continuity has been defined and a corresponding guide for practical application has been prepared.

4. Aquaculture

The first comprehensive economic, social, ecological and market analysis of the development of the Aquaculture sector in Bulgaria has been prepared, identifying the main reasons for the small production volumes and value of aquaculture in our country, as well as for the low consumption of fish and fish products in comparison with that in other European countries. All aspects of aquaculture production that can have negative effects on the environment and which accordingly need to be subject to control and prevention are systematized. An original methodology for determining the places, quantities and ways of stocking with trout fish is proposed, which can be applied in the implementation of national and regional fish farming plans, management plans of national and natural parks, and others.

Assoc. prof. Uzunova has participated in 15 national and 6 international scientific and educational projects, financed by both national and international funds. She was the head of 10 national projects. Her

knowledge of ecology and conservation of aquatic ecosystems makes her a sought-after expert. Assoc. prof. Uzunova participated in the preparation of practical assessments and reports on the impacts of hydroelectric power plants on water ecosystems and the proposal of mitigating measures to reduce their negative impact on the environment. All this testifies to her active scientific-organizational and expert activity, and to her ability to work in a team.

Conclusion

Based on the analysis of the overall educational, teaching and research activities of Assoc. Dr. Eliza Uzunova, I find that she fully meets the requirements for the occupation of the academic position "professor" according to the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of ADASRB, as well as the Regulations for the terms and conditions for acquiring scientific degrees and occupying academic positions at SU "St. Kliment Ohridski". Sufficiently convincing evidence of her teaching and high scientific activity has been presented. This gives me the reason, as a member of the Scientific Jury for the announced competition, appointed by Order No. RD-38-611/15.11.2022. of the Rector of SU "St. Kliment Ohridski", to give a positive assessment and recommend to the members of the honorable Faculty Council of the Faculty of Biology to vote positively for the **election of Assoc. prof. Eliza Petrova Uzunova PhD to the academic position of "professor" in professional direction 4.3. Biological Sciences (Ichthyology and Aquaculture).**

06/02/2023

Prepared the review:



(Prof. Nesho Chipev)