TO:
THE SCIENTIFIC JURY

RE:
Resolution RD-38-41 of 26.01.2023
of the Rector of Sofia University "St. Kliment Ohridski "

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OPINION

by

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on a dissertation thesis for obtaining a PhD in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.4. Earth Sciences (Terrestrial and Water Resources Hydrology)

<u>**Author of thesis: Alexander Dimitrov Vassilev**</u>
<u>**Thesis topic: 'Hydrographic characteristics of lakes in the Rila Mountains'**</u>

Relevance:
The dissertation topic has undeniable relevance and will continue to be the focus of research influenced by the geoecological challenges of climate change and water scarcity, as well as practice - in the sustainable management of mountain watersheds and their resources.

Theoretical background and creative interpretation of literature
The nature of the statement in the theoretical setting of the dissertation and the directly related structuring of the research tasks show that PhD student Alexander Vassilev has a good theoretical background for organizing this type of research, for generating results, and for interpreting them against facts and data already known to science.

Aim, objectives, research hypotheses and research methods
The general character of the dissertation shows a good orientation in the scientific problem, a clear statement of the subject of research and a logical correspondence of the set tasks. A wide range of methods have been used to generate a primary database, which has subsequently been statistically processed and analysed against known in practice classifications and threshold values (corresponding to geographical conditions).

Illustration and presentation of the results

The illustration of the thesis is consistent with the methods applied in the study to generate and process the information, and above all to support the systematization of the primary data and the derived statistical analyses.

The spatial characteristics of the study site suggest careful use of cartographic visualization of information (including geographic scale!), which can support thematic analysis of the source data in relation to the geographic setting of origin and development of the lake bodies, their contemporary status and system dependencies. I would like to recommend that the PhD student devote the necessary time to this in future outreach activities.

Discussion of the dissertation results and contributions

I accept the dissertation contributions thus indicated as objective.

The results of the study offer a modern inventory of the lakes in Rila in terms of key parameters, which is a serious contribution against the background of the very limited literature of primary geographic data, and creates a rich information environment for building on research with different thematic focus on the state of the lakes, their resources and the associated ecological environment.

Assessment of the degree of personal involvement of the candidate in the contributions

Thus, the dissertation submitted for opinion forms an impression of scientific research conducted by the candidate with strong motivation, perseverance and dedication. The share of field observations in the overall structure of the research, the presentation of the processed information and the discussion of the results convince me that the PhD student has mastered and put into practice a system of well-established research methods that are the basis of original scientific results

Critical comments and questions

As a major drawback of the dissertation's design, I would define the lack (including graphically presented) of a methodological framework that would allow to follow the logic of the research, its structuring by steps and methods of research, and respectively - of forming and building on original results. It is not clear how direct and remote research methods are practically combined. There is a lack of references and clear reference to the versions of the software used and a critical look at the representativeness of the results obtained in the course of their application.

The presence of stylistic and editorial errors in the exposition (including the different formulation of the title in the main text of the thesis and in the abstract) hinder the "readability" of the text and the perception of the results. I recommend caution in this respect when presenting results in future scientific publications.

Also absent is a clear addressing of the results in terms of potential stakeholders and a statement of the applicability of the results obtained. On this basis, I address the following questions to the PhD candidate:

1. Which of the methods tested in the study is the most suitable for regular monitoring of lakes in Rila?
2. Which of the relationships between lake morphometrics analyzed in this dissertation is most informative for the management/conservation of upland watersheds?
3. Is the organization of the empirical data in a suitable georeferenced environment for data systematization undertaken (the methodological part indicates the application of GIS)?

Published articles and citations

The main results of the research are available to the scientific community, which is confirmed by the presented publications directly related to the dissertation topic.

CONCLUSION:

On the basis of the above, I accept that the submitted dissertation meets the requirements of the Law on the Acquisition of Scientific Degrees and Academic Positions of the Sofia University "St. Kliment Ohridski". On this basis I express my **POSITIVE** opinion FOR AWARDING the degree of PhD to ALEXANDER DIMITROV VASILEV in the professional field 4.4. 4.4.1 Earth Sciences, specialisation Terrestrial and Water Resources Hydrology**.**

Sofia, April 18th 2023   Member of Scientific Jury:
                                        Assoc. Prof. Bilyana Borisova PhD