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OPINION

by Assoc. Prof. Dr. Eng. Petar Georgiev Georgiev
Member of the Scientific Jury for awarding the educational and scientific degree "Doctor" (PhD), Order No. 211 / August 5, 2026
regarding the dissertation thesis of **Yordan Raev Raev**, titled: "Technological solutions for reducing discards in fisheries"; Field of Higher Education Code 4. "Natural Sciences, Mathematics and Informatics", Professional Field Code 4.3. "Biological Sciences", Doctoral Program "Ecology and Ecosystem Protection", Scientific Direction "Sustainable Exploitation and Protection of Living Marine Organisms"
Scientific Consultant: **Assoc. Prof. Dr. Eng. Ivelina Zlateva**, IO-BAS; Scientific Supervisors: **Assoc. Prof. Dr. Violin Raykov**, IO-BAS, **Prof. Dr. Eng. Atanas Palazov**, IO-BAS

General Characteristics of the Dissertation Thesis

The dissertation thesis meets the requirements of the Republic of Bulgaria and the Institute of Oceanology - BAS (IO-BAS). Its volume is 156 pages, including 111 pages of main text, 22 pages of references, and 23 pages of appendices; it contains 30 figures, 25 tables, and 6 appendices. The list of cited literature includes 218 titles, of which 2 are in Cyrillic, 201 in Latin, and 15 are internet sources. The two literary sources in Bulgarian are legislative documents.

A valuable appendix for readers who are not specialists in the subject is Appendix No. 1 - "Glossary of Basic Concepts", which explains specific terms from English. A summary of contributions (2 pages) and a list of publications on the dissertation topic (1 page) are included. The list of abbreviations placed at the beginning facilitates the reading and comprehension of the text.

The literature review demonstrates the doctoral student's very good awareness of the dissertation topic. The review covers the general concept of fishing gear selectivity, selectivity as a means to limit bycatch and discards, technological solutions to increase selectivity, management approaches, the role of stakeholders, and the international and European regulatory framework in comparison with the national regulatory framework. The presentation of the state of research on selectivity in the Black Sea, and specifically in Bulgaria, is particularly important.

The aim is defined, and 9 tasks are outlined for its implementation. The object and subject of the study are specified, and a scientific hypothesis to be confirmed is put forward. The study presents experimental trawling under real conditions, catch measurement, quantitative assessment of selectivity using an established methodology, and statistical modelling of the selective characteristics of different codend variants.

The dissertation and the abstract are very well illustrated.

Relevance of the Dissertation Topic

The relevance of the topic is indisputable, as it concerns the sustainable management of fish resources in the Black Sea, which has suffered serious damage caused by human activities over the last nearly 5 years.

Main Contributions and Significance of the Results

As a result of the conducted research, one scientific and five scientific-applied contributions have been defined. I express some reservations regarding the scientific and one of the scientific-applied contributions.

It is declared as a scientific contribution that "*...for the first time for the Bulgarian waters of the Black Sea, a comprehensive analysis of the operational selectivity of conventional trawl gears has*

been performed...". This is a known methodology, and for the contribution to be scientific, the study must prove that global or foreign theories, models, or phenomena function in a specific way in the Bulgarian environment (e.g., due to economic, cultural, genetic, or social specificities). Collecting and analysing primary data for Bulgaria that did not previously exist in the global scientific literature is, in itself, a contribution to enriching the scientific database. The adaptation of standardized research tools to Bulgarian conditions for the first time is a serious methodological contribution.

Connected to this is the first scientific-applied contribution, which states: "*...an applicable methodology for assessing the operational selectivity of trawl fishing gears has been developed...*". My question here is, what is the difference, for example, between this and the methodology set out in the ICES (The International Council for the Exploration of the Sea) document - Cooperative Research Report No. 215: Manual of Methods of Measuring the Selectivity of Towed Fishing Gears?

With these comments, I recognize the defined contributions in the dissertation thesis.

Abstract (Extended Summary)

The abstract is presented in Bulgarian (32 pages) and in English (34 pages) and meets the requirements of the Regulations for Development of the Academic Staff at IO-BAS.

Publications on the Dissertation Topic

There are 3 co-authored publications, two of which are in journals with a Q4 quartile and one in Q3. Additionally, a standalone report for participation in the International Conference BlackSea2026 was presented, which was accepted by the jury. The doctoral student meets the requirements under the Development of Academic Staff in the Republic of Bulgaria Act (DASRBA) and the internal regulations of IO-BAS for the field, with a total score of 59 points from publications.

Critical Remarks, Recommendations, and Questions

1. The term "design of experiments" appears in the text, but in practice, the core elements of this theory are not presented – namely, controllable variables with their levels, responses analysed, or the fractional factorial design (probably) used for the experiments. This is understandable, considering that real fishing vessels are used, which have their own daily schedule and fishing plan.
2. I recommend that Yordan Raev to find his own research niche and conduct studies while publishing as the first author in significantly smaller working groups, thereby highlighting his own scientific potential.
3. My question is related to designations I found in similar published studies while preparing for this opinion. What exactly are the designations 40D, 40S, 40T, and 44D, which apparently refer to codends, and why do they not appear in the dissertation thesis?

Plagiarism

The doctoral student declares that he presents original scientific results obtained by him in the course of the study. This is also supported by a check performed with specialized software for potential plagiarism, for which the corresponding protocol is attached.

Conclusion

My evaluation of the dissertation thesis is positive. Taking into account that this concerns an educational and scientific degree, Yordan Raev has presented both existing and newly acquired knowledge and has shown the ability to conduct scientific research, which is the ultimate goal of doctoral studies.

I recommend to the esteemed jury to award Yordan Raev Raev the educational and scientific degree "Doctor" (PhD) in the Field of Higher Education Code 4. "Natural Sciences, Mathematics and Informatics", Professional Field Code 4.3. "Biological Sciences", Doctoral Program "Ecology and Ecosystem Protection", Scientific Direction "Sustainable Exploitation and Protection of Living Marine Organisms".

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