



Confidential

Review of USB FFPW PhD Thesis

First name(s), surname, titles of the PhD student: Roman Šebesta, Dipl.-Ing.	First name(s), surname, titles of supervisor: Dipl.-Ing. Vlastimil Stejskal, Ph.D.
Title of PhD thesis: Selected aspects of intensively cultured European whitefish (<i>Coregonus maraena</i> , Bloch) and peled (<i>Coregonus peled</i> , Gmelin)	

REVIEWER:

Surname: Gai	Institution: Consiglio Nazionale delle Ricerche Istituto di Scienze delle Produzioni Alimentari 10095 Grugliasco, Italy
Name: Francesco	E-mail: francesco.gai@ispa.cnr.it
Titles: Dr.	
Please describe your professional relationship to the PhD student:	Please describe your field of expertise: Animal nutrition

QUESTIONNAIRE

Originality, scientific importance, perspectives and impacts of results presented in the PhD thesis for basic and/or applied research

Evaluate competitiveness of the PhD thesis in the international context and compare its level with the current state of the art in the field (**extent ¼ – ½ page**):

The PhD thesis elaborated by the candidate and titled Selected aspects of intensively cultured European whitefish (*Coregonus maraena*, Bloch) and peled (*Coregonus peled*, Gmelin) has been characterized by a high level of competitiveness as demonstrate by the interest of several scientific journals of the aquaculture sector where results are published or are waiting for the evaluation process. The topic and the approach chosen by the candidate for the experimental design of the trials carried out during his thesis provide novel informations about several biology aspects important for the improvement of the quality of the larvae of these fish species reared in recirculation aquaculture systems. The current state of the art in the field is well described in the thesis with an update reference list of selected publications and experimental data obtained in this thesis surely improved the actual knowledges that seem to be stagnant in the last decade.



Elaboration of the PhD thesis, objectives of the work and deliverables

Evaluate the overall level of elaboration of the PhD thesis (structuring of the main text, comprehensibility, logicity of the chapters and their ordering) and the originality of the selected approaches to solve the objectives; evaluate publications and whether the results described correspond to objectives of the PhD thesis (**extent ¼ – ½ page**):

The thesis considering the structuring of the main text, comprehensibility, logicity of the chapters and their ordering could be defined very well elaborated and it is easy for the evaluator to follow the flow of the works carried out in a rational manner. The originality of the selected approaches to solve the objectives proposed are very interesting and denote from the side of the candidate a very promising organizational and rational capacity for a possible future career as a researcher.

The candidate has produced in the period of his thesis 5 articles accepted in IF journals with a good editorial position and one of them (published on Journal of Fish Diseases) has been accepted in a high ranking (Q₁) journal classified as Gold. Other 2 more papers has been also submitted to two journals of the Q₂ rank with a good recognized reputation level and are currently considered for a possible acceptance. Overall, considering the period of activity of the proponent, the results described correspond to the objectives of the PhD thesis and his scientific production can be considered very good both in terms of number and quality of published papers.

OVERALL COMMENTARY ON THE PhD THESIS

Please write comments in extent of 1-2 pages:

This PhD thesis provide novel informations about several biology aspects important for the improvement of the quality of the larvae of European whitefish and peled reared in recirculation aquaculture systems (RAS). Traditionally these fish species are reared in Eastern Europe by pond aquaculture techniques but due to several environmental factors such as the water pollution and degradation of natural spawning sites their production declined dramatically in the last decade.

The project appears innovative and ambitious because it addresses a very important issue for the larval breeding of these fish species alternatives to the classical ones with important and practical consequences at commercial and academic level for both fish farmers and fish conservatories.

The methodologies used are consistent with the implementation and the aims of the project and are described in a very clear and well-schematized manner in the thesis. The activities carried out in the various experiments are complementary to each other and able to address the research topic in all its possible angles both from a basic and applied research point of view.

Particularly interesting is the multidisciplinary approach utilised that involves various disciplines such as life sciences (biology), veterinary sciences (histology) agronomic sciences (animal husbandry). All of these approaches provide the project with a completely exhaustive picture about the different aspects related to predetermined objective. The scientific impact of the results of this research could be translated into knowledge transfer activities with undoubted economic returns on the territory. As far as the academic CV of the candidate is concerned, considering the period of activity of the proponent, the results described correspond to the objectives of the PhD thesis and his scientific production can be considered very good both in terms of number and quality of



published papers.

Overall, on the light of the above comments, the candidate work could be classified as EXCELLENT.

FINAL RECOMMENDATION

- PhD Thesis can be recommended for defence
 PhD Thesis can be recommended with reservations for defence
 PhD Thesis cannot be recommended for defence

18/09/2018 Grugliasco
Date and place

Francesco Gai
Name and signature



Confidential

Review of USB FFPW PhD Thesis

First name(s), surname, titles of the PhD student: Roman Šebesta, Dipl.-Ing.	First name(s), surname, titles of supervisor: Dipl.-Ing. Vlastimil Stejskal, Ph.D.
Title of PhD thesis: Selected aspects of intensively cultured European whitefish (<i>Coregonus maraena</i> , Bloch) and peled (<i>Coregonus peled</i> , Gmelin)	
REVIEWER:	
Surname: Zarski	Institution: Institute of Animal Reproduction and Food Research of Polish Academy of Sciences, Olsztyn, POLAND
Name: Daniel	
Titles: Dr.	E-mail: danielzarski@interia.pl
Please describe your professional relationship to the PhD student: I did not have any 'professional relationship' with the PhD student, except some e-mail correspondence related to the analysis of data coming from reproduction of burbot which he was working on while visiting the laboratories of University of Warmia and Mazury in Olsztyn, Poland.	Please describe your field of expertise: Aquaculture Controlled rproduction Larviculture Reproductive physiology Fish gametes biology

QUESTIONNAIRE

Originality, scientific importance, perspectives and impacts of results presented in the PhD thesis for basic and/or applied research

Evaluate competitiveness of the PhD thesis in the international context and compare its level with the current state of the art in the field (**extent ¼ – ½ page**):

The thesis refer to a very important aspect of aquaculture in general - which is larviculture. The thesis is focusing on Coregonid fishes being a niche group of fishes for Czech aquaculture (according to the mentioned production volume of 140 tons of maximum production in 2002), but with really high potential in other countries, including Poland, Scandinavia and Alpine region of Europe. And it should be emphasized, that Coregonids are highly appreciated fish species in several European countries, with high commercial interest, but global production comes mostly from wild catches. Therefore, development of potentially intensified aquaculture of these species would allow for increment of production volume and prevent overharvesting of wild populations, which according to FAO amount to 17 thousands of tons annual catches.

The thesis is focusing on the optimization of basic biotic and abiotic conditions during the intensive rearing of the larvae, being potentially important part of intensified production technology (with combined intensive-extensive production technology) of fish intended to be stocked in the earthen ponds. From this point of view, the thesis is a



state-of-the-art scientific venture addressing the problematics in appropriate way. The Candidate performed very well designed experiment which partly were already published in high-rank scientific journals (from JCR list), what confirms their important for the international audience. Taking into account the quality of the research of the articles not published yet (paper 3 and 4) it can be with highest probability assumed that they will also be published soon. In summary, the thesis is a valuable state-of-the-art scientific contribution to the aquaculture-related field of science. Besides the scientific value, however, it also constitute very good contribution to the aquaculture industry, as it addresses the most pressing problems in larviculture of Coregonids and constitutes valuable set of data and final recommendations to a fish farmers on the optimal conditions of growing Coregonid larvae.

Elaboration of the PhD thesis, objectives of the work and deliverables

Evaluate the overall level of elaboration of the PhD thesis (structuring of the main text, comprehensibility, logicity of the chapters and their ordering) and the originality of the selected approaches to solve the objectives; evaluate publications and whether the results described correspond to objectives of the PhD thesis (**extent ¼ – ½ page**):

OVERALL COMMENTARY ON THE PhD THESIS

Please write comments in extent of 1-2 pages:

General comment

The thesis is focused on a very niche group of fishes for Czech aquaculture (according to the mentioned production volume of 140 tons of maximum production in 2002), but with really high potential to other countries, including Poland, Scandinavia and Alpine region of Europe. And it should be emphasized, that coregonids are highly appreciated fish species in several European countries, with high commercial interest, but global production comes mostly from wild catches. Therefore, development of potentially intensive aquaculture of these species would allow for increment of production volume and prevent overharvesting of wild populations, which according to FAO amount to 17 thousands of tons annual catches.

Candidate appropriately addressed the constraints toward expansion of traditional aquaculture production systems and that recirculating aquaculture systems (RAS) are promising alternative allowing either diversification or increment of aquaculture production inland. In this way he strongly justified the need for revision of traditional production technology of coregonids and develop effective protocols for this species with the use of modern aquaculture production systems. In further part of the introductory section of the thesis the Candidate inherently identified the main biotic and abiotic factors influencing rearing effectiveness of freshwater fish larvae in RAS.

Main body of the thesis

The thesis is consisted of 2 published papers as a first author, 2 manuscripts prepared for submission to a scientific journal and 3 papers where PhD Candidate is a co-author. Apart from the papers where Candidate is a co-author, which should be considered as an added value that Candidate was first participated in the initial research under the direct supervision of more

experienced researchers, the main contribution represent interesting contribution to the aquaculture-related sciences.

In the articles presented the methodology, although being state-of-the-art, is developed so that constitutes very interesting approach, in most of the cases. In addition, it may be easily noticeable, that the Authors addressed the problematics in the most complex way, what put the articles in the spotlight of very good laboratory practices where hatchery-related aspects are at the highest level. However, I am missing in those studies involvement of more modern analytical tools (eg. molecular biology) which would allow to address the mechanisms standing behind the phenomenons observed. Nonetheless, I have no major critics over the quality of the research, the aims of the studies performed as well as the final outcome of the experiments.

General discussion

In my view the majority of General discussion section fits more to Introduction, as this describes state-of-the-art and actually justifies the scientific part of this study, which should be done before the experiments are described. And actually, while going along the text of this chapter I have an impression that the Candidate too much effort put on justification of this what he has done, as high majority pretty well describes the need for such a research. In effect, the sound of the entire General discussion chapter not really needed to be provided in this form. However, one must be emphasized, that this chapter presents good writing skills and style of the Candidate, which need to be appreciated in overall rating of the entire thesis. As considering the structure of this chapter, I would also suggest not to keep focus on each paper separately, as many aspects are very similar in the articles constituting the scientific part of the thesis. In this General discussion I would much more appreciate a global overview on the results obtained in the context of larviculture in general as well as fish biology and mechanisms conditioning certain adaptation/effectiveness/performance. Nonetheless, again, I must highlight the appropriate way this text is written.

Conclusions

Generally the conclusions are appropriately defined, though I am missing the final specific recommendation on the temperature to be used in maraene whitefish and final nutrition strategy. Besides, I would expect from the specialist working for a few years on Coregonids larvae final recommendation what should be the environmental conditions and feeding regime allowing effective growth and lowering the incidence of malformations potentially, having negative impact on the quality of fish produced. In effect, instead of conclusions this part contains brief description on the effect of the tested parameters on the Coregonids larvae, which is the same what is contained in the introductory parts. Therefore, I suggest that Candidate will put stronger emphasis on more stronger (though supported by the data) conclusions allowing appropriately judge his ability to make suitable conclusions coming from global overview over the research he made. I think this stems from the fact that the thesis included more than one species, what led the Candidate to 'secure' way of consideration of his research. In my personal opinion – needlessly. Nonetheless, it should be stressed out that conclusions presented in the articles, constituting the main body of the thesis are appropriately addressed and there is no doubt that, when comes to specific experiments, Candidate is capable of concluding his research with required self-criticism and confidence.



Fakulta rybnářství
a ochrany vod
Faculty of Fisheries
and Protection
of Waters

Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice
Czech Republic

FINAL RECOMMENDATION

- PhD Thesis can be recommended for defence
- PhD Thesis can be recommended with reservations for defence
- PhD Thesis can not be recommended for defence

21.09.2018, Olštiny

Date and place

Daniel Záh

Name and signature