



Confidential

Review of USB FFPW PhD Thesis

First name(s), surname, titles of the PhD student: Tatyana Gebauer (Vanina), MSc	First name(s), surname, titles of supervisor: prof. Ing. Jan Kouřil, Ph.D.
Title of PhD thesis: Growth, genetic and morphological characteristics of different perch (<i>Perca fluviatilis</i>) populations in intensive aquaculture	
REVIEWER:	
Surname: Kalous	Institution: Czech University of Life Sciences Prague, Faculty of Agrobiology, Food and Natural Resources, Department of Zoology and Fisheries
Name: Lukáš	
Titles: prof. Ing., Ph.D.	E-mail: kalous@af.czu.cz
Please describe your professional relationship to the PhD student: None	Please describe your field of expertise: Sustainable aquaculture, Ichthyology, Invasive species

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):

Presented Ph.D. thesis is based on an original idea of European perch intraspecific diversity and its applicability in aquaculture. Presented Ph.D. thesis approved its scientific importance by the acceptance of the ideas presented in enclosed articles in internationally recognized scientific journals. The perspective of the implementation of the presented findings in practice (evaluation of applied research) is by my opinion rather small but on the other hand valuable.

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):

I appreciated the structuring of the main text in the Ph.D. thesis. It is clearly written by the standard English language. All chapters are logically built and easy to follow. I appreciated the overall comprehensibility and hierarchic ordering. The selected methodological approaches are standardly used and well-chosen to solve the stated objectives. Presented three publications fit well to the



defined Ph.D. topic and correspond to three described objectives.

OVERALL COMMENTARY ON THE PhD THESIS

Please write comments in extent of 1-2 pages:

The idea of the presented Ph.D. thesis is based on the assumption that the intraspecific diversity of European perch is mirrored in its different "aquaculture performance" (growth, survival etc.). In other words, thesis try to answer the question: if the place of origin matters for choosing the fish for recirculating aquaculture system?

The answer is ambiguous. As shown by several presented findings, it probably matters where is the fish geographical/population origin but it may also matter on parents effect, the effect of environment and probably many other effects that may impact the specific fish "aquaculture performance" in captivity.

Tatyana in her first-author article "Genetic and aquaculture performance differentiation among wild allopatric populations of European perch (Percidae, *Perca fluviatilis*)" published in the Journal Aquaculture named groups of fish in the experiment by names of (human) nations in the places of fish collection. On page 42 we got Czechs, Slovaks and Polishes (correctly should be Poles).

Well, I am fine with the metaphor but a metaphoric question comes into my mind. Could be shown a correlation on the number of gold medals of Czechs, Slovaks and Poles from Olympic games based on physical abilities (100m run) of children?

Analogically, the test would be based on the same number of children born at the same time in three maternity hospitals, one in Czechia, one in Slovakia and one in Poland.

The answer would be ambiguous because it matters on many other factors. Domesticated fishes are similar to top athletes. The path to Olympic games winner is a long term process.

Anyway, I enjoyed Ph.D. thesis of Tatyana and her findings, especially the discussed tendency of better "aquaculture" performance of fish from higher latitudes.

After a successful defence, I recommend awarding Tatyana Gebauer by title philosophiæ doctor in abbreviation Ph.D.



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

11.7.2019 ÚNĚTICE

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Date and place



LUKÁŠ KALOUS

.....
Name and signature



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Review of USB FFPW PhD Thesis

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Title of PhD thesis: Growth, genetics and morphological characteristics of different perch (<i>Perca fluviatilis</i>) populations in intensive aquaculture	
REVIEWER:	
Surname: Kucharczyk	Institution: Department of Lake and River Fisheries, Warmia and Mazury University in Olsztyn, Poland
Name: Dariusz	
Titles: prof. Dr. habil.	E-mail: darekk56@gmail.com
Please describe your professional relationship to the PhD student:	Please describe your field of expertise: finfish reproduction and larviculture, with special topic percid fish

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):

Research on European perch aquaculture is currently one of the topics. And this trend of research is part of a doctoral thesis by Tatyana Gebauer entitled "Growth, genetic and morphological characteristics of different perch (*Perca fluviatilis*) populations in intensive aquaculture". Earlier studies conducted on the European perch have explained how important this problem is. Different perch populations show differences in growth rate, survival, stress resistance, etc. This freshwater fish species has high potential to be aquaculture species, which might be intensively commercially reared under controlled conditions (in RAS). However, many bottleneck points of intensive culture should be still developed by researchers and then applied in the fish farms. A thorough knowledge of all aspects of this problem allows you to choose both the right populations for breeding in intensive aquaculture and the selection of appropriate breeding



methods.

The research presented in the doctoral dissertation was carried out at a very high scientific level. They are competing to research carried out by other authors in Europe. There are also carried out on a very high scientific level and was cited by other authors. The obtained results in this dissertation will be huge impact on basic and applied research. The work is original and supplements missing information in the literature. The results obtained should be the basis for the preparation of breeding protocols for European perch in intensive aquaculture.

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 PhD thesis by Tatyana Gebauer entitled "Growth, genetic and morphological characteristics of different perch (*Perca fluviatilis*) populations in intensive aquaculture" is correctly structured. The aim of the study was clear and understandable presented. The chapters are well ordered. The author chooses the adequate and responsible research methods to solve the PhD study objectives. The quality of published papers in the scientific journals are high. All of them are published in high aquaculture scientific journals: Aquaculture and Aquaculture International. All attached papers and manuscripts are ordered logically. The aim of the study is strictly corresponded with the described results. The PhD thesis contains important information both for scientists and fish farmers. Much of the information contained in this trial can be successfully implemented immediately to commercial fish culture.



OVERALL COMMENTARY ON THE PhD THESIS

Please write comments in extent of 1-2 pages:

The PhD thesis by Tatyana Gebauer entitled "Growth, genetic and morphological characteristics of different perch (*Perca fluviatilis*) populations in intensive aquaculture" is a part of the modern research on the diversification of intensive inland aquaculture. The subject of the doctoral dissertation is very important for the further development of intensive aquaculture. The research was done on freshwater fish species, which has commercial value today, perch, *Perca fluviatilis*, will be very important aquaculture species. European perch is recognized as one of the most promising species for freshwater aquaculture in Europe. This is due to the excellent quality of the meat as well as some bottlenecks of reproduction, larviculture and fattening already developed. In spite of many successes of the scientists, there are still many problems to be solved and they were the focus in the evaluated doctoral dissertation.

The dissertation was correctly written in formal terms. The description of the research is preceded by a well-written chapter "General introduction", in which the author presents issues related to the presented work, including well and clearly formulated aims of the work. Then, three published scientific papers were presented. They presented, among others:

- ✓ Comparison of larval growth rate and genetic differentiations between larvae originated from seven different populations collected from Poland, Finland, Czech Republic and Slovakia
- ✓ Comparison of survival, growth rate, cannibalism in larval and juvenile perch originated from three different population (collected from Poland, Czech Republic and Slovakia).
- ✓ Differences in behaviour and aggressive interactions in perch collected from three different wild population (one from Switzerland and two from Finland).

The dissertation was finished with well prepared General discussion section. In the end, six conclusion points were presented.



The dissertation "Growth, genetic and morphological characteristics of different perch (*Perca fluviatilis*) populations in intensive aquaculture" by Tatyana Gebauer was high quality prepared. The draft doctoral dissertation, especially in the chapter "General introduction", contains a few editorial errors and inaccuracies, which I present in a separate file. However, these minor shortcomings do not in any way reduce the high value of work, both scientific and practical. In addition, they indicate further points that should be developed in the near future.

Once again, I would like to emphasize a very high scientific value assessed doctoral dissertation. In addition, many respondents also have a practical aspect and can be successfully used in aquaculturally practice.

I also apply to the Scientific Council of the Faculty of Fisheries and Protection of Waters of the University of South Bohemia in Ceske Budejovice, for the award assessed dissertation entitled "Growth, genetic and morphological characteristics of different perch (*Perca fluviatilis*) populations in intensive aquaculture" by Tatyana Gebauer.

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

Olštiny, 15-07-2019

Date and place

Danien Keckorczyk

D. Keckorczyk

Name and signature