



Review of USB FFPW PhD thesis

First name(s), surname, titles of the PhD student: Jinfeng Zhao, M.Sc.	First name(s), surname, titles of supervisor: Assoc. Prof. Dipl.-Ing. Martin Kocour, Ph.D.
Title of PhD thesis: Broader insight into mutual genetic and phenotypic relationships of production-related quantitative traits in common carp	

REVIEWER:

Surname: Hilsdorf	Institution: University of Mogi das Cruzes, Brazil
Name: Alexandre Wagner Silva	
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Please describe your professional relationship to the PhD student: No relationship	Please describe your field of expertise: Genetic Resources applied to fish breeding. Molecular markers

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 Ph.D. thesis present a series of experiments translated into seven chapters, including a general introduction. These chapters cover different aspects of common carp genetic breeding. Four out of six experimental outcomes of the thesis are already published in influential journals, such as Aquaculture and PLOS-One. The candidate contributed to all studies and was the first author in two articles. The published studies have proven the results are original and scientifically worthwhile investigations, contributing significantly to the genetic breeding knowledge applied to common carp 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 thesis follows a logical line of thought, presenting the objectives into a series of results presented in four published articles and one to be published. The general introduction is well written, easy to follow, and offers a state of the art of carp breeding. It is an essential introduction to those who are unacquainted with the topic. The six chapters present scientific outcomes following the aims pursued by the candidate as described in the specific objectives on page 18. The four published articles were already peer-reviewed and therefore were certified concerning their scientific results. The last chapter, "Simplified method for genetic slaughter yields improvement in common carp under European pond conditions", still to be published address to estimate genetic variation and correlations of simple slaughter yield predictors, among others, and suggest a simplified methodology of carp breeding program. Overall, the method is well presented, and the animal model used correctly addresses the carp's slaughter yields. Some minor issues were identified as follows:

In the sentence "For instance, ultrasound tomography might be simply and efficiently used for indirect phenotypic prediction of slaughter yields in breeding programs of fish (Bosworth et al., 2001; Haffray et al., 2013; Vandeputte et al., 2017) ". There are two studies related to using ultrasound images to obtain non-lethally phenotypes in tambaqui (*Colossoma macropomum*), which can be cited here.

PERAZZA, C.A., PINAFFI, F.L.V., SILVA, L.A., HILSDORF, A.W.S. (2015). Evaluation of ultrasound imaging to predict loin eye area in tambaqui. *Boletim do Instituto de Pesca*, 41: 803-809.

PERAZZA, C.A., MENEZES, J.T.B., FERRAZ, J.B.S., PINAFFI, F.L.V., SILVA, L. A., HILDORF, A.W.S. (2016). Lack of intermuscular bones in specimens of *Colossoma macropomum*: An unusual phenotype to be incorporated into genetic improvement programs. *Aquaculture*, 472 (Supplement 1): 57-60.

In the sentence "A total of 773 survived individuals were humanely sacrificed by a hit on the head and bled by cutting the gills according to the law on the protection of animals against cruelty". I did not understand how this kind of fish slaughter by hitting o the head being called "humanely." Maybe the best approach is to carry out ice-slurry immersion of fish followed by piercing or severing the spinal cord of fish to kill or immobilize it (see Humane killing of fishes for scientific research: a comparison of two methods (DOI: 10.1111/j.1095-8649.2010.02633.x.)

Results

It would be nice to see in the thesis the images of ultrasound tomography (SonoScape E2, 10 MHz) taken to understand the methodology better. This technology is relatively recent, and it would be good to have more details of how the images were captured and evaluated.



OVERALL COMMENTARY ON THE PhD THESIS

Please write in the box specific comments concerning the PhD thesis in extent of 1-2 pages:

Overall, the thesis proposes relevant research questions, which are supported by the experimental results. As corroborated by the four articles already published in important journals, mainly the Aquaculture journal, the results are valid to fulfill the requirements at the Ph.D. level. The author completed the research question, undertook a comprehensive literature review on each topic, applied appropriate methods to address each of the aims, and translated these into comprehensive articles. I, therefore, conclude that the aims presented in the thesis have been successfully reached.

FINAL RECOMMENDATION

- PhD thesis can be recommended for defence X**
- PhD thesis can be recommended for defence with reservations**
- PhD thesis cannot be recommended for defence**

July 5th, 2021
São Paulo, Brazil

Professor Alexandre Wagner Silva Hilsdorf, PhD