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To
Prof. Andrej I. Granovitch
St. Petersburg State University
St Petersburg
RUSSIA

June 11th, 2013

Review of the dissertation of Marina Varfolomeeva entitled “Biotic interactions, structure, and long-term changes in marine benthic assemblages” submitted for the degree of Doctor of Philosophy in Biology at the Saint-Petersburg State University

Dear Prof. Granovitch,

Please find enclosed my review of the above mentioned dissertation of Marina Varfolomeeva.

Sincerely

Thomas Brey

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Review of the Dissertation of
Marina Varfolomeeva
entitled

“Biotic interactions, structure, and long-term changes in marine benthic assemblages”
submitted for the degree of Doctor of Philosophy in Biology at the Saint-Petersburg State
University

- General remarks

Six papers published between 2007 and 2013 (2x first author and 2x senior author) in four high level international journals (Hydrobiologia (2), Journal of Experimental Marine Biology and Ecology, Marine Ecology Progress Series (2), and Oecologia) constitute the core of Marina Varfolomeeva's PhD thesis. This is a substantial scientific production in its own right (about one paper per year) and also more than sufficient content for a dissertation. In comparison, at my University of Bremen PhD students are expected to produce at least three papers for their cumulative (in contrast to monographies) thesis within the regular three years of PhD studies. Moreover, most likely more than 10 scientists with such experience and reputation to be elected as reviewers have reviewed the work of Marina Varfolomeeva in the most critical way during the publication process and, obviously, found it to be sufficiently original and valid for publication in high ranking journals. Hence, a large panel of colleagues already judged Marina Varfolomeeva to be competitive at the international level in her field of research, and I am confident that this judgment of my colleagues is just.

Accordingly, I will not dive deeply into the details of each publication but will try to look at this thesis from a more general, synoptic point of view. In the following, I will evaluate Marina Varfolomeeva's thesis along the detailed list of tasks provided by the St.Peterburg State University:

- The significance and status of the dissertation in the field

Species interactions have developed into one major focus of contemporary ecology during recent years. Ecologists came to realize that these features define stability and resilience of living communities. Accordingly, both theoretical and applied research aim at a more mechanistic (cause and effect) understanding of interaction patterns, their significance for system functioning and their constraints, e.g. biodiversity, functional diversity and redundancy, or body mass spectra.

However, the spatial and temporal dynamics of such patterns at different scales have been found to be of equal significance for our understanding of ecosystem function and its variability, and thus draw more and more attention in “mainstream” ecology.

Marina Varfolomeeva's research work fits well into this context. She looks at spatio-temporal variability (at small scales predominantly) in particular soft bottom and epibenthic communities with the intention to identify patterns and mechanisms of general significance. Hence, this dissertation addresses central questions of modern (marine) ecology.

- The sufficiency and quality of the material

Both quantity and quality are more than adequate for a dissertation, see “General remarks” above. From the “German” academic system's point of view, seven years appear to be quite a long time for a PhD, given the fact that this degree constitutes the essential qualification for an academic career. However, things may be different in Russia, and this long time span may also explain why Marina Varfolomeeva is first author of just two of the six PhD-publications, but senior author of another two papers.

- The adequacy of the methods used

I am not an expert in all methods applied here, but I follow the verdict of the reviewers of the six manuscripts (see “General remarks” above), who obviously see the methods used as appropriate and valid.

- The validity of results

Validity has been rigorously and positively evaluated by the reviewers of the six manuscripts, see “General remarks” above.

- The logic of the dissertation’s structure

The introduction provides a good introduction into the theme and its relevance. The subsequent discussion represents a synthesis of the scientific findings presented later in detail by the six publications. I found this discussion well structured and written. Despite the fact that many aspects and mechanisms of the studied system remain enigmatic, Marina Varfolomeeva was able to condense her findings into a few general conclusions. Five out of the six publications deal with different aspects of one epibenthic “model” system, the barnacle/ascidian/mussel association, in one region (Onega Bay), whereas the remaining paper analyzes long term variability of soft bottom macrobenthos in nearby bights. The latter paper has been put in first place in the dissertation, presumably to set the general frame for the in-depth study of the model system. One could argue that the topic of this particular publication is somewhat isolated from the central theme of the dissertation, but I reckon that it represents a valid attempt to provide a wider description of ecosystem dynamics. The corresponding five publications are arranged in a logic sequence, starting with pattern analysis and proceeding towards trophic structure and population dynamics. To sum up, this thesis is well and logically structured.

- The knowledge and use of literature in the field

I have the impression that Marina Varfolomeeva knows her field of research well. Particularly the discussion shows that she is aware of the complex contextual framework of her research. All publications and the discussion provide an ample list of references, thus indicating a good knowledge of the actual literature. Regarding the discussion one might think that some important papers are missing, e.g. Dayton 1971, Menge & Sutherland 1976, Paine 1981, Lively & Raimondi 1987, but most likely these additional references would be redundant.

- The project's contribution to the research area

This is not easy to judge, as this is rather recent work (2007 - 2013). However, the “SCOPUS” data bank citation overview indicates that Marina Varfolomeeva’s publications are cited by the international research community. Thus, her work is considered to be a substantial contribution to the research area.

- The author’s input into the achievement of the dissertation results

Marina Varfolomeeva wrote the synthesis (“Discussion”), she is first author of two papers and senior author of a further two papers. Although I cannot judge her exact share in each of the six publications that constitute the thesis, the apparent evidence indicates that Marina Varfolomeeva is the main driving force of this research work.

- Language

English style and grammar are very good (as far as I can judge this, not being a native speaker).

- The shortcomings of the manuscript

To my knowledge, there are no major flaws in this thesis. The publications are of international level quality, and the discussion connects these single studies in the best way possible. Obviously, in a perfect world these single studies would be more closely inter-connected, e.g. each study would build in a logical way on the previous ones. However, under realistic everyday conditions, field research is a continuously developing and adjusting issue, making initial plans rather obsolete more often than not.

Review

of the Dissertation of Marina Varfolomeeva
submitted for the degree of Doctor of Philosophy in Biology
at the Saint-Petersburg State University

The dissertation of Marina Varfolomeeva consists of 97 pages that are structured appropriately for cumulative dissertations: The (six) original publications are supplemented with a seven page overall discussion of the issue, and the thesis is completed by introduction, summary and acknowledgements.

The text of my review is in accordance with above mentioned criteria.

On the basis of the above-mentioned criteria, the dissertation of Marina Varfolomeeva complies with the international standard for PhD dissertations in the corresponding field.



Thomas Brey
June 11th, 2013