

## **Supervisor evaluation for the PhD thesis by Thomas Galland**

When Thomas Galland started to work in our lab we had several ongoing projects and thus offered him several options for different types of studies to be developed. In other words, we offered him a certain degree of freedom and independence to choose and develop projects where to invest his work and time within such a framework. The general topic of the thesis was agreed to be the effect of biodiversity, and particularly in terms of functional traits, on the temporal provision of multiple ecosystem functions. A brief look at the thesis is enough to demonstrate that the initial aim and focus was very well developed, as planned, and resulted in a very successful scientific output. During the time of the thesis Thomas was thus able to significantly contribute to a number of important papers included in the thesis. Specifically, 3 papers from the thesis have been published in high impact journals (J. Ecology and Ecological Indicators, as first author, and PNAS as significant contributors in data preparation and writing). The thesis includes a 4<sup>th</sup> manuscript, which is basically ready to be submitted to a high impact journal, and which summarizes a great deal of work done, both conceptual and methodological, during the thesis. Other publications (Valencia et al. 2020 J. Veg. Sci.; de Bello et al. submitted to Trends in Ecology and Evolution and two papers by Conti et al. submitted to Ecology Letters and Applied Vegetation Science) remained outside the thesis because the contribution was somehow less important, although still significant. During the time of the thesis Thomas also started to develop two own research projects, and contributed to other two in collaboration with post-docs, which once complemented with additional analyses could also result in other important publications. During the period Thomas also was able to organize independently two long-term visits abroad to work with top international scientists (Eric Garnier, in Montpellier, and Miguel Verdu in Valencia) to expand his knowledge of both analytical techniques with functional traits (with Eric) and analyses of soil microbial diversity (with Miguel). This enormous amount of work, effort and output done during the thesis demonstrate the high value of the research developed by Thomas during his PhD studies. Thomas also learned, very quickly, a great variety of quantitative methods, and applied them very well across the different studies, developing quite sophisticated analyses. For all these reasons, me and the other supervisor very warmly support his thesis to be accepted for the PhD degree.

Maybe because such great effort done during the thesis, including long-stays abroad and different revision processes with the papers, Thomas progressively grew a bit tired and less excited by the research activity and, unfortunately, will not continue in research after defending the thesis. According to all people that collaborated with, or supervised him (including his supervisors abroad), it is a real pity. At the same time everybody do wish him the best in his new adventures in his family farm.

As a matter of fact a great deal of work done by Thomas during his thesis were conducted in the farm hold by another former PhD researcher from the Department of Botany, Miroslav Srutek, in the location Benešov. In this location we established a biodiversity-ecosystem functioning experiment just before Thomas arrived to our lab. Although Thomas did not design the main experiment, he did decided and organized a great deal of the sampling campaigns and sub-projects run in the location, resulting in two of the chapters from the thesis. A couple of exciting subprojects, on decomposition and nutrient cycling, are still in preparation resulting from his own designed sampling and experiments. Another study in

his thesis is based on some parametrized simulations to assess the properties of various existing indices of functional redundancy, several of which were developed by our lab. Thomas critically faced this challenge and showed that these indices, actually, are possibly not really essential to understand the functioning of biological communities. It is very exciting, for a supervisor, seeing that the students/collaborators are independent enough to question the work done by his own supervisor, in a constructive and robust way. The final chapter of the thesis, published in PNAS, results from a broad team effort assessing one of the mechanisms by which biodiversity affects the temporal provision of ecosystem functions, i.e. 'compensatory dynamic' through species lack of temporal synchrony. The careful work by Thomas at the beginning of the project, and his thesis, particularly in collaboration with the first author of the paper, was indeed essential to shape the way the data was finally prepared and homogenized for the data analyses across a huge global database (with 8000 vegetation plots, from ~80 locations worldwide). Such database, now called LOTVS (LONG-Term Vegetation Sampling), is indeed greatly in debt with the dedicated and critical initial contribution by Thomas.

To conclude I firmly believe the thesis by Thomas is, both in terms of output and variability in the type of studies and approaches (field work, simulation, meta-analyses), a very good and comprehensive PhD thesis in ecology and I totally recommend its acceptance. I think Thomas showed a great deal of independence, sense of self-criticism, and autonomous thinking which would make of him a good material for a researcher. Besides this it was a real pleasure to share the lab, and collaborate in so many projects, with him.

Valencia, 4.12.2020  
Francesco de Bello

**Francesco**  
**o de**  
**Bello**

Digitally signed  
by Francesco de  
Bello  
Date: 2020.12.04  
17:57:40 +01'00'