Lea Beaumelle

Current project : Effect of landscape structure and pesticide use on biodiversity and agroecosystem multifunctionality in vineyards

- **PIs** : Adrien Rusch (INRAE, UMR SAVE) Brice Giffard (BSA, UMR SAVE)
- **Funding** : **SECBIVIT project** (Biodiversa/Belmont forum)

Building farming systems and agricultural landscapes that provide multiple ecological functions and ecosystem services while preserving biodiversity is a major issue in the present context. My postdoc project aims to synthesize knowledge about the role of landscape structure and agricultural practices for multi-trophic biodiversity and multifunctionality in vineyards. This work relies on data collected across Europe within the Biodiversa project "secbivit" and the French study area "Bacchus". I will address the structure of communities of a broad range of taxonomic groups (arthropods, plants, birds, micro-organisms) as well as multiple ecosystem services (pest control, yield, decomposition) across vineyards differing in pesticide use, management practices and landscape structure. This synthesis will provide crucial insights for conservation, by identifying management options that can improve multiple ecosystem services while preserving different facets of biodiversity in agricultural landscapes.

Research interests

I am interested in the impact of global change on ecosystems. Natural ecosystems are simultaneously submitted to multiple anthropogenic drivers of environmental change (e.g. warming, pollution, habitat loss) threatening biodiversity and ecosystem functioning. My research aims to better understand the consequences of global change drivers, especially chemical stressors (such as metals and pesticides), for soil biodiversity and ecosystem functioning. I aim to bridge the gap between ecotoxicology and ecology, putting more ecology into ecotoxicology and going beyond environmental risk assessments based on effects at the individual organism level. For that, I use synthesis approaches, experimentations as well as theoretical models.

CV

- September 2017 – January 2020 : PostDoc Position

German Centre for Integrative Biodiversity Research, Synthesis Centre sDiv, Leipzig, Germany
"How multiple environmental change drivers shape the biodiversity-ecosystem functioning relationship?"

- September 2015 – March 2017 : PostDoc Position

Institute for Radioprotection and Nuclear Safety (IRSN), Cadarache
"Ecological risks associated with mixture of radioactive and stable chemicals."

- October 2011 – November 2014 : PhD student

Institute for Agricultural Research (INRA), Versailles, France
"Graphical modelling of metal bioavailability to earthworms"

Selected publications

L. Beaumelle, D. Vile, I Lamy, F. Vandenbulcke, F. Gimbert, M. Hedde (2016). A structural equation model of soil metal bioavailability to earthworms: confronting causal theory and observations using a laboratory exposure to field-contaminated soils. Science of The Total Environment DOI: 10.1016/j.scitotenv.2016.06.023

L. Beaumelle, C. Della Vedova, K. Beaugelin-Seiller, J. Garnier-Laplace, R. Gilbin (2017). Ecological risk of mixtures of radioactive and stable chemical compounds predicted by multi-substance SSD. Environmental Pollution

Giling, D. P., Beaumelle, L., Phillips, H. R., Cesarz, S., Eisenhauer, N., Ferlian, O., ... & Siebert, J. (2019). A niche for ecosystem multifunctionality in global change research. *Global change biology*, *25*(3), 763-774.

Phillips, H., Beaumelle, L.**,** Tyndall, K., Burton, V., Cameron, E., Eisenhauer, N., & Ferlian, O. (2019). The effects of global change on soil faunal communities: a meta-analytic approach. *Research Ideas and Outcomes*, *5*, e36427.