From long-term monitoring of biodiversity and evaluation of ecosystem functioning to stakeholders viewpoint and ecosystem services provisioning : field socio-ecological experiments in a French LTSER

Vincent Bretagnolle, Sabrina Gaba

From long-term monitoring of biodiversity and evaluation of ecosystem functioning to stakeholders viewpoint and ecosystem services provisioning: field socio-ecological experiments in a French LTSER

Vincent Bretagnolle*†[1,2] and Sabrina Gaba[3]

[1]Centre d'études biologiques de Chizé (CEBC) – CNRS : UPR1934 – Centre d'Études Biologiques de Chizé CNRS 79360 VILLIERS-EN-BOIS, France

[2]LTER "Zone Atelier Plaine Val de Sèvre", Centre d'Etudes Biologiques de Chizé, CNRS – CNRS : UMR7372 – Villiers-en-Bois F-79360, France, France

[3]Agroécologie – Agrosup, Institut national de la recherche agronomique (INRA) : UMR1347, Université de Bourgogne, CNRS : UMR1347 – F-21000 Dijon, France

Abstract

The current environmental crisis is systemic and involves complex patterns and processes. In addition, given human footprint on world ecosystems and the fact that human societies mainly rely on ecosystem services, the future of both ecosystems and human societies are intimately interlinked, calling for research questions joining them. The major critical question becomes how human societies and ecosystems will both, interactively, respond to global change. Such question requires dedicated research infrastructure devoted to long-term ecological research and integrated socioeconomic issues i.e. LTSER. In LTSER, scientific approach has to cope with processes affecting by the interaction between society and nature. Such challenge can be achieved by testing hypothesis using replicated design experiments in real world linking both ecosystem functioning and stakeholder issues. We here present five examples of socio-ecological experiments performed in an intensive farming area of cereal cropping system, i.e. LTSER Zone Atelier 'Plaine & Val de Sèvre' (France). These examples span from very localized agroecological experiments on pollination and biocontrol in farmers' fields and farming conditions, farm experimental work within agroecological framework on reducing reliance on agrochemicals, small landscape field experiment on filed test of neonicotinoid risk assessment on honeybees, large landscape scale experiment manipulating grassland cover at the whole LTSER site (450 km^2), to finally experiment using citizen science with schools and inhabitants of villages. In each of these experiments we provide the ecosystem output and the stakeholder/society consequences of our tests. We finally discuss how genericity and advises for policy makers can emerge from these socio-ecological experiments.

Keywords: LTSER, Stakeholders, Pollination, Pest Control, Crop Production

*Speaker

†Corresponding author: breta@cebc.cnrs.fr