
Importance of the soil food web in the functioning and services of Mediterranean forest ecosystems submitted to climate change

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Abstract

Plant litter decomposition is an essential process for ecosystem functioning since it determines carbon and nutrients cycling. Among involved actors in litter decomposition process in Mediterranean forests, collembola and mites appear as important groups, especially through their trophic interactions. Indeed, it is well known that microorganisms are grazed by collembola communities that are also preys of predatory mites. Climatic parameters such as soil temperature and humidity, strongly mediate abundance, diversity and trophic interactions of these soil organisms. However, climatic change expected for the current century, particularly the increase of temperature and the number of dry days in Mediterranean region, may directly impact collembola communities and their responses to predation. Moreover, these responses could vary among species depending on their morphological and physiological traits (e.g. body or furca sizes). A 2-month microcosm experiment was carried out to study the impact of the increase of air temperature (+10°C) coupled with the decrease of soil humidity (-30% of soil field capacity) and the presence or absence of a predatory mite (Acari: *Stratiolaelaps scimitus*) on i) the abundance and the biomass of collembola community, i.e. *Folsomia candida*, *Proisotoma minuta* (Collembola: Isotomidae), *Protaphorura fimata* (Collembola: Onychiuridae) and *Mesaphorura macrochaeta* (Collembola: Tullbergiidae), ii) the microbial structure and composition (PLFA) and iii) the litter mass loss (*Acer monspessulanum*).

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