

Methods of investigation for assessing the effects of environmental changes on ecosystems

Maisto G. ^{1*}

¹*Dipartimento di Biologia, Università di Napoli Federico II, via Cinthia, 80126 Napoli, Italia*

* *e-mail: giulia.maisto@unina.it*

In recent decades, human activity has caused deep changes in environmental quality, altering the structure and the functionality of terrestrial and aquatic ecosystems. The various stressors can act individually or in combination, determining responses at different levels of the hierarchical organization (individual, population, community) on both spatial and temporal scales. Hence the need to investigate the effects and the responses of environmental changes on the biotic component of ecosystems. Methods of investigation are numerous and of various types. For example, laboratory experiments allow the assessment of the effects of single and multiple stressors (chemical, physical and biological) on the study model, under controlled conditions; semi-field or field experiments allow the assessment of the integrated effects of multiple stressors on the biotic component of the ecosystem; modelling approaches, using data obtained from laboratory and field experiments, allow the extension of knowledge at different spatial and temporal scales, making increasingly reliable short- and long-term predictions of the possible scenarios of ecosystem changes in different spatial areas. The obtained data by each method of investigation and their integration contribute significantly to increase the current knowledge about the response of the biotic component of the ecosystem to environmental changes. This is fundamental in order to implement management policies aiming to preserve ecosystems with high level of naturalness and to improve the degraded ones.