

Foreword

Biodiversity, Ecosystems, and Global Change

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1. Introduction

Biodiversity plays a crucial role in supporting ecosystems functioning, maintaining healthy ecosystems while providing several ecosystem services vital for human well-being (Costanza et al., 1997, 2014; Häyhä and Franzese, 2014). The massive exploitation of natural resources and pollution generated by human activities are causing several environmental threats at local and global scale, among which chemical pollution, eutrophication, soil erosion, biodiversity loss, water crisis, and climate change (Folke et al., 2011; Meadows et al., 2004; Rockström et al., 2009). The anthropogenic impact is also strongly threatening biodiversity and the functionality of natural ecosystems (Cardinale et al., 2012; Hooper et al., 2012; MA, 2005; TEEB, 2010). As a consequence, species are forced to disappear or to modify their behavior, adapting to changing environments up to extreme habitats (Dirzo et al., 2014; Frangou et al., 2010).

In this context, natural capital and ecosystem services assessment represents a growing research area aimed at supporting the development of sustainable management schemes and nature conservation strategies (Buonocore et

al., 2018; Franzese et al., 2015, 2017; Häyhä et al., 2015; Nikodinoska et al., 2018; Pauna et al., 2018; Picone et al., 2017; Vassallo et al., 2017).

The management of natural resources based on the principles of sustainable development requires the investigation and integration of environmental, economic, and social aspects (Franzese et al., 2008, 2014; Russo et al., 2014; Ulgiati et al., 2010; Viglia et al., 2013). These aspects can be investigated through multicriteria assessment frameworks capable of supporting local managers, policymakers, and other stakeholders (Buonocore et al., 2012, 2014; Nikodinoska et al., 2017).

2. Goal of this special issue

The main goal of this special issue is to present a set of articles exploring different aspects related to biodiversity, ecosystems, and global change. In particular, this special issue gathers theoretical, methodological, and applied papers exploring the following research areas: a) state of endangered habitats and related conservation strategies, b) effects of global change on marine ecosystems, c) ad-

aptation strategies to cope with extreme environments, d) use of chemical and natural compounds in agriculture, and e) ecosystem services assessment.

3. Papers presented in the special issue

This special issue collects papers presented at the XXVII Congress of the Italian Society of Ecology (S.It.E.), summarized as follows.

Angelini et al. (2018) provide an overview on the methodologies used for monitoring the structure and functions of habitat types in Italy, focusing on the use of plant assemblages as typical species for consistent and reliable monitoring programs.

Mangoni et al. (2018) compare past and present summer primary production processes in the Ross Sea and discuss different environmental conditions related to the changes in phytoplankton abundance and species composition.

Pauna et al. (2018) explore the global scientific literature on “ecosystem services” to track the evolution and trends of the topic over the last three decades by using bibliometric network analysis.

Capezzuto et al. (2018) provide additional evidence of the utilization of Cold-Water Corals (CWC) and submarine canyons by fishes as areas for growing and reproduction, and for the classification of CWC as Essential Fish habitats.

D’Elia et al. (2018) present the most significant features of a bioresource center located in Naples (Southern Italy), collecting microalgal strains of particular interest for the preservation and study of biodiversity.

Ladhari et al. (2018) test five phenolic and cyanogenic glycoside compounds isolated from Mediterranean plants for growth regulating activity on the germination and seedling growth of different plant species.

Donnarumma et al. (2018) assess the structure and function of molluscan assemblages in different habitat types of several Mediterranean marine protected areas, exploring trophic and species diversity among habitats as well as the differences in the composition of molluscan assemblages within the same type of habitat.

4. Concluding remarks

The Guest Editors hope that this volume will boost the interdisciplinary knowledge on different aspects related to biodiversity, ecosystems, and global change.

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