

CONSERVATION OF MEDITERRANEAN LANDSCAPES (EDITORIAL)

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BACKGROUND

Mediterranean landscapes and ecosystems in the Old World are characterized by long and strong human impacts and a high natural, socio-economic and political diversity (Myers et al., 2000; Farina, 2006). They harbor high levels of biodiversity and are often depending on human management (Naveh, 2010). The variable and diverse Mediterranean landscapes are an important global heritage and often understudied. Due to the political heterogeneity in the European, Asian and African countries bordering the Mediterranean Sea, common efforts in conservation research and implementation are urgently needed (Olsvig-Whittaker et al., 2012). Regional differences, similarities and synergies should be evaluated.

Within this context, an 'Ad-Hoc Committee for Mediterranean Conservation' was established during 2012 under the umbrella of the European Section of the Society for Conservation Biology (SCB-ES). This committee organized the symposium "Changing Mediterranean Landscapes" at the International Association of Landscape Ecology (IALE) European Congress: "Changing European Landscapes. Landscape Ecology: Local to Global" (8-12th September 2013, Manchester, UK) and participants of the symposium provided research articles for this special issue.

Already in 2012, during a workshop held at the 3rd European Congress for Conservation Biology "Conservation on the Edge", (28th August – 1st September 2012, Glasgow, UK), a list of priority research topics were elaborated for the Mediterranean landscapes of the Old World. As potential research topics are plentiful, such attempts at prioritizations are useful tasks. The participants of the meeting agreed on placing high priority on research to:

- 1) harmonize research protocols, indicators, monitoring and modeling approaches for Mediterranean biodiversity;
- 2) systematically survey the flora and fauna of understudied marine and coastal regions, such as large parts of the East-Adriatic and the North-African coast;
- 3) assess and map demand and supply of ecosystem services, focusing particularly on topics that are specific to the Mediterranean such as the importance of fire as driver of ecosystem functioning, and the high demand/supply-ratio for freshwater;
- 4) assess the effects of climate change on the distribution, phenology and interactions of species, and on ecosystem functions and services and their variation across Mediterranean landscapes;

- 5) assess the current distribution of invasive alien species, monitor their spread, assess their impact on ecosystem functioning, and characterize the major mechanisms determining invasions and their interaction with other aspects of global change;
- 6) increase the proportion of Mediterranean studies on agricultural landscapes and their management as European conservation policies are currently strongly biased towards evidence from northwestern Europe;
- 7) assess biodiversity, ecosystem functioning, ecosystem service provision and management options for Mediterranean grassland ecosystems;
- 8) assess the feasibility and the ecological and socio-economic consequences of rewilding marginal agricultural areas where the potential for native habitat restoration is particularly high;
- 9) assess the effectiveness of currently applied conservation actions across the Mediterranean region and test options that could maximize their efficiency;
- 10) assess drivers of human behavior and assess how human behavior might be changed towards a higher level of environmental, social and economic sustainability.

RECENT RESEARCH

The articles comprising this special issue are based on investigations from the Western, Central and Eastern Mediterranean and deliver insights on priority research topics.

Farina et al. (2014) present the recently developed soundscape approach for obtaining indirect and timely information about the state of ecosystems. The new discipline of soundscape ecology has recently proven to be particularly appropriate for investigating the complexity of Mediterranean landscapes. Technological advances in the acoustic field enable wide-scale and long-term soundscape ecological research using e.g. digital low cost sound recorders and autonomous software and metrics. Conserving the quality of Mediterranean sounds means preserving the natural dynamics of its animal populations, maintaining the cultural heritage, the human identity and the spiritual values of the area. Environments with high sonic quality produce recreational and health benefits for their human populations.

Van der Sluis et al. (2014) present research from the Central and Eastern Mediterranean by comparatively assessing the impacts of land abandonment on cultivation terraces in Portofino (Italy) and Lesvos (Greece) as case studies of landscape change in Mediterranean farmlands. Land abandonment in the Mediterranean has recently received much attention (Verdasca et al., 2012; Plieninger et al., 2013; Zakkak et al., 2014) and is, together with intensification and urbanization, without doubt one of the key aspects of Mediterranean land use change. Van der Sluis et al. (2014) show in their article that the impact of changing land management on landscape character and diversity is well reflected in the cultivation terraces. However, landscape history as a whole is on the other hand only reflected to a limited extent in the land use change of the last decades. Especially in olive plantations, which are very persistent without maintenance, a considerable time lag between abandonment and disappearance of the olive trees was detected. Production functions can eventually be maintained, if it is ensured that measures are taken to retain the inherent qualities of Mediterranean landscapes.

Barroso and Pinto-Correira (2014) investigate the attitudes and behaviours of Mediterranean land managers. The importance of investigating attitudes and behaviours of local land owners for enabling effective nature conservation was recently recognized (e.g. Pinto-Correira et al., 2006; De Snoo et al., 2013; Porto et al., 2014), but several

questions remain unanswered such as: do the attitudes get translated into actual behavior and actions? Barroso and Pinto-Correira (2014) answer this question based on 373 questionnaires completed by land managers in South Portugal. The study reveals surprising inconsistencies between land managers attitudes and their actions; the results can support better oriented policies and management decision.

Roadless and low-traffic areas are European priority conservation targets (e.g. Selva et al., 2011). Roadless areas are also the topic of the article by Zomeni & Vogiatzakis (2014) in this species issue. The authors quantitatively assess size, characteristics, pervasiveness and distribution of the dense road system of the Island of Cyprus with particular reference to the Natura 2000 network at the island. Roadless areas (defined as having no road in the surrounding 1 km) cover 5% of the island, and 80% is found within Natura 2000. Fragmentation has been lower on mountainous areas where land units are larger and under state ownership. A strong road expansion has taken place in all parts of the island during the last 20 years.

Also the remaining two articles are dealing with the Eastern Mediterranean, in particular with Israel and The Palestinian Authority. Rotem & Weil (2014) mapped the ecosystems and the protected areas of Israel and The Palestinian Authority, with the purpose of determining whether the ecosystems are adequately represented in the protected areas. They defined 17 terrestrial and 6 aquatic systems in the two regions that harbor four phytogeographic-climatic regions, i.e. Mediterranean, Irano-turanian, Sahro-Sindian desert, and Sub-tropical. In both regions the terrestrial ecosystem-units of the less arid and denser populated areas such as Mediterranean maquis, Loess plains, Sandy dunes, Coast line saline, 'light soils' (Hamra Husmas and Kurkar), and alluvial valleys as well as The Dead Sea and the Sea of Galilee are not represented satisfactorily in the network of protected areas as well (Rotem & Weil, 2014). Finally, Shaffer & Levin (2014) assess human induced landscape changes in Israel during 130 years using a historical land cover map from 1881 derived from the Palestine Exploration Fund. Few areas retained similar landscape classes as in the past, with the largest changes taking place in ecoregions that were favorable for developing agriculture, mainly plains with precipitation ranging between 400-600 mm/year. The majority of the protected areas were unchanged, but most are located in desert areas.

ENABLING ACTIONS AND FURTHER STEPS

The workshop participants also elaborated enabling actions for the accomplishment of these goals and for enhancing conservation research and implementation in the Mediterranean and agreed on the following priority actions:

- 1) encourage the development of a high-profile scientific journal. This aim should be reached preferably by enforcing the already existing Journal of Mediterranean Ecology.
- 2) increase access of Mediterranean researchers and practitioners to relevant literature. Preferred publishing in open-access journals would be an option to increase the availability of scientific information for Mediterranean target audiences.
- 3) compile freely accessible databases on (i) national experts across the Mediterranean which can be contacted for specific expertise and cooperation regarding conservation issues in their country, (ii) primary biodiversity data and important environmental variables including invasive alien species and their invasion history (GBIF and DAISIE might provide support), (iii) conservation knowledge that should go beyond scientific literature and contain also local expert knowledge and traditional knowledge.

- 4) enhance the cooperation across the Mediterranean basin by enforcing scientific societies, facilitating cooperation meetings, joint workshops, exchange visits, and application of the European FP program for cooperation and capacity building (especially with Asiatic and African parts of ‘Old World’-Mediterranean, but also with other Mediterranean areas of the world). Local student workshops and summer schools may be a good way to reach the conservation biologists in the countries of the Southern Mediterranean.
- 5) find synergies with other Mediterranean –based organizations including ISOMED, the organizers of the MEDECOS conferences.
- 6) implement a kick-off-conference of the “Ad-hoc working group for Mediterranean conservation” to work together on the most important tasks such as the identification of research priorities on a broader basis, form working groups and to seek funding.
- 7) seek for startup funds for the working group, and the kick-off-conference.

Since 2012 several activities have started in this regard:

1. The Society for Conservation Biology (SCB) and the International Association for Landscape Ecology (IALE) have agreed to jointly recognize and support the Mediterranean Committee. This will enable the Mediterranean Committee to hold meetings under the aegis of either organization. This kind of inter-organizational collaboration works very well and should lead to reduced costs and increasing interactions among participants.
2. Through the efforts of Francisco Moreira, participants in the International Society for Mediterranean Ecology (ISOMED) have joined the Mediterranean Committee’s activities. With this new input, we are currently planning a symposium in the context of the SCB international congress to be held in Montpellier (France) during August 2015 that will advance the interests stated here.
3. We are participating in the first congress of the newly formed Turkish chapter of IALE: “International Congress on Understanding Mediterranean Landscapes: "Human vs. Nature" (2014). 23-25 Oct 2014, Antalya, Turkey. Many of the Mediterranean Committee will be in attendance, along with presidents of IALE and SCB, so we hope to substantially advance our work in this congress.

We welcome the readers of the Journal of Landscape Ecology to join our activities and efforts! At present the Mediterranean Committee can be found on the SCB-Europe website. Those who would like to participate in this working group should contact Linda Olsvig-Whittaker to be added to our mailing list.

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