



SHORT COMMUNICATION

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Stocktaking forestry knowledge in Eastern Mediterranean: a glimpse on where do practitioners stand

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Abstract

Aim of the study: To identify the lines of research initiatives and programmes on forest ecosystem and trees and shed lights on the need of new insights in forestry sector.

Area of Study: Eastern Mediterranean countries (i.e. Jordan, Lebanon, Syria, Turkey).

Materials and Methods: Online assessment through search on Google, Science Direct, Tandfonline, Forestry related journals, PLOS ONE, FAOSTAT, FAO-Agris, Unasyuva, and Research Gate. Direct contacts were made with researchers at universities and professionals from international development organisations.

Main results: The highest contribution in research is recorded in Turkey, followed by Lebanon, Syria and Jordan. Forest ecosystem functioning was ranked first in the research thematic areas, followed by forest ecosystem management. Research interest focuses on limited genera of coniferous and broadleaf trees. Emerging needs feature the execution of comprehensive national and regional stocktaking exercises to harmonize research agendas; ensuring synergies between international agreements' goals (e.g. SDGs) and national policies instruments (e.g. NBSAPs); alignment of research agendas with national and international related frameworks; revisiting governance structure and regulatory measures and laws in the forestry sector.

Research highlights: Insights put in the interface a new outlook on the leadership profile and foundation of interdisciplinary communities of practices. Rethink academic forestry related programmes and transform the approaches adopted to aim for more inclusiveness leading to stronger knowledge and coherent and successful practices in forestry.

Keywords: demining database; legal preparedness; native trees; forest governance.

Supplementary material (Tables S1, S2 and S3) accompanies the paper on FS website.

Citation: Sattout, E., Faour, G., El-Sarraf, N. (2017). Stocktaking forestry knowledge in Eastern Mediterranean: a glimpse on where do practitioners stand. *Forest Systems*, Volume 26, Issue 1, eSC01. <https://doi.org/10.5424/fs/2017261-08970>

Received: 16 Nov 2015 **Accepted:** 07 Mar 2017

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Funding: The authors received no specific funding for this work.

Competing interests: The authors have declared that no competing interests exist.

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Introduction

In the past decades, the scope of regional and national assessments led by international organizations, inter-governmental agencies, academic and research institutions have evolved over time to respond to the needs of forests conservation and management in Eastern Mediterranean Countries (EMCs). Eastern Mediterranean forests cover approximately 14% of the total forest areas in the Mediterranean region. They are estimated at a total of 22.6 million ha ranging from 1 to 15% of the total countries' area (FAO, 2013). They harbour 36 endemic conifers (Blondel *et al.*, 2010) and a remarkable concentration of economically important

species (Merlo & Croitorou, 2005; Di Matteo *et al.*, 2015), particularly crop wild relatives (Heywood, 2008). Mediterranean landscapes feature long-lasting relationships between humans and forests for almost 10,000 years (Blondel & Médail, 2009), which emphasize the importance of having holistic view of forests and building novel insights on their conservation and management. For more than two decades, the design of forestry research programs in EMCs has been evolving to serve governments needs and develop their institutional capacities. Apart from this, countries have either implemented stand-alone initiatives or worked on collaborative projects within regional or sub-regional context. Those have brought up a mass of



Figure 1. Percentage forest cover, thematic research areas dominance and forestry publications and country rank in EMCs.

knowledge to the scientific community and developed new managerial and technical skills. In some countries, generated information remains scattered and prevailing gaps in administrative and legislative frameworks hinder to some extent effective implementation of National Forest Policy (NFP) and National Action Plans (NAPs) among others. There is a need to reflect on past experiences and draw the existing leadership profiles in EMCs in both research and practice.

The objectives of this short communication were to perform a stocktaking exercise on forestry in Jordan (JO), Lebanon (LB), Syria (SY) and Turkey (TR); to identify the lines of research and thematic areas; and to shed lights on the need of new insights and leadership in forestry sector in some countries of the EMCs. The study was developed in the context of ERA-NET Final Conference on 'Enhancing FOREST RESEARCH in the MediTERRANEAN through improved coordination and integration (FORRESTERA), held in November 2015 in Portugal.

Material and methods

The stocktaking exercise targeted forestry research initiatives and programmes in Jordan, Lebanon, Syria and Turkey. Internet search looked for available online resources (i.e. Google, science direct, tandfonline, Forestry related journals, PLOS ONE, FAOSTAT, FAO-Agris, Unasyuva, Research Gate, Universities and

International organisations), followed by direct contact made with scholars and representatives of international organisations operating in the EMCs. Recent studies on native trees were added to an existing database compiled in 2013 for the production of a book on EMCs native trees (Sattout & Zahredine, 2014).

Online assessment resulted in a database comprising approximately 450 peer reviewed articles, grey reports and working documents. The generated database is organised in a simple excel workbook including two separate sheets. The first 'spreadsheet' compiles peer reviewed articles sorted out by country and classified under 6 thematic areas: [1] state of forests, [2] wildlife and fauna, [3] forest ecosystem functioning, [4] forest landscape ecology, [5] forest economy and [6] forest conservation and management (Table S1 [supplementary]). It also presents references about the Mediterranean region with relevance to EMCs. The second table arranges publications into 32 genera of tree species native to Eastern Mediterranean (Table S2 [supplementary]).

Results

The contribution in research presents different records in the four countries with the highest one observed for Turkey, followed by Lebanon (Table S3.1 [supplementary]; Fig. 1). In Syria, it was found that the value might be underestimated as the publications are

made in-house and mostly published in local Universities Journal (Dr. Abido – personal communication, 2016). With a forest cover less than 0.9%, Jordan's research inputs is low in the forestry sector, while more prominent in rangelands management. That being revealed, access to scimago journals database on number of published documents and country rank showed that Turkey ranks first in the EMCs with more than 2000 documents, followed by Jordan, Syria and Lebanon (SRJ, 2016) (Fig. 1). Collaborative research initiatives reveal to be minimal between countries (4%) and limited to those sharing same borders. LB/SY articles are mostly descriptive and do not involve designed research studies. SY/TR studies target vegetation succession and composition as well as forest fire (Table S3/3.1 [supplementary]).

Thematic areas' ranking reveal that high weight is given to forest ecosystem functioning, followed by forest ecosystem management (Table S3/3.2 [supplementary]). Despite the bulk of studies in both, redundancy in research prevails among others in some countries. The studies on forest economy launched in 2000, occupied a good portion of research in comparison to other thematic areas. At the beginning, they captured direct and indirect use values. Then, the value types shifted to ecosystem services categories with the emergence of Millennium Ecosystem Assessment (MEA) (<http://www.millenniumassessment.org/>). Those categories are sustained within the research community with the appearance of The Economics of Ecosystem and Biodiversity (TEEB) initiative (<http://www.teebweb.org/>). The magnitude of each thematic area in countries showed that Turkey is ranked first in all thematic areas, except for ecological functioning where it occupies same level as Lebanon (Table S3/3.3 [supplementary]; Fig. 2).

Research interest in forest trees remains limited mostly to species of *Cedrus*, *Pinus*, *Quercus* and *Pistacia* (Fig. 3). Among the thirty-two genera of trees native to the EMCs, research studies done in the region is inexistent for some others such as species of *Amelanchier*, *Phyllirea*, *Salix* and *Sorbus*. While coniferous constitute approximately 32% of the results of online search with only five genera, among the 68% on broadleaf tree *Quercus*, *Pistacia* and *Arbutus* dominated (Table S2 [supplementary]).

Information about research and development projects was not easy to gather. The online search revealed that numerous internationally funded projects target forest resources assessment and reforestation since the sixties. Lately, research programs shifted towards ecosystem-based management and mapping and quantifying ecosystem services. And more recently,

priority is given to forest landscape restoration and management.

Discussion

Human capital and resources brought up an enormous set of knowledge and new skills to forest researchers and practitioners in the EMCs. At some point, they partially responded to national priorities in the forestry sector in countries. For instance researchers in Lebanon still express the need for a definition about forests and comprehensive studies on the demographic structure of existing forests. In Turkey, Atmis (2016) expresses the need to revisit national priorities and consider urban forests management. On another level, findings of studies by Di Matteo *et al.* (2015) and Scarascia-Mugnozza & Matteucci (2012) based on regional surveys presented various insights about the needs of the whole Mediterranean region.

The region calls for the need of a comprehensive stocktaking exercise at national and regional level to harmonize research agendas and synergize efforts invested in research whenever possible and applicable. Gaps in elementary data have sometimes emerged whenever evidenced-based decisions are needed for NFP's development and implementation in some countries. At this stage, the sustainability of human capital and financial resources could maintain its pace when operationalizing and consolidating the outcomes of all previous regional and national initiatives. For instance, EMCs could first initiate processes of demining publically and privately generated official and grey data; validate, harmonize, store and manage them to be made available through national-regional interoperable platforms. Second, they can mobilize roster of experts to work with researchers and practitioners while cooperating even at distance through established platforms. Third, they need to ensure synergies between international agendas (Sustainable Development Goals 2030, Aichi Targets, etc.) and national policy's instruments (NFPs, NBSAPs, NAPs, etc.) and align research programmes with national policies directly or indirectly related to forests. Four, they need to rethink governance in the forestry sector including legal preparedness. All that might be legitimate, but is the core issue embedded only in those needed actions in the region?

Insights go beyond all that because they put in the interface a new outlook on the needed type of leaders and research and practitioners communities. Even though leadership is a universal phenomenon, its magnitude of difficulty of inducing changes is still affected by the organizations and cultures in

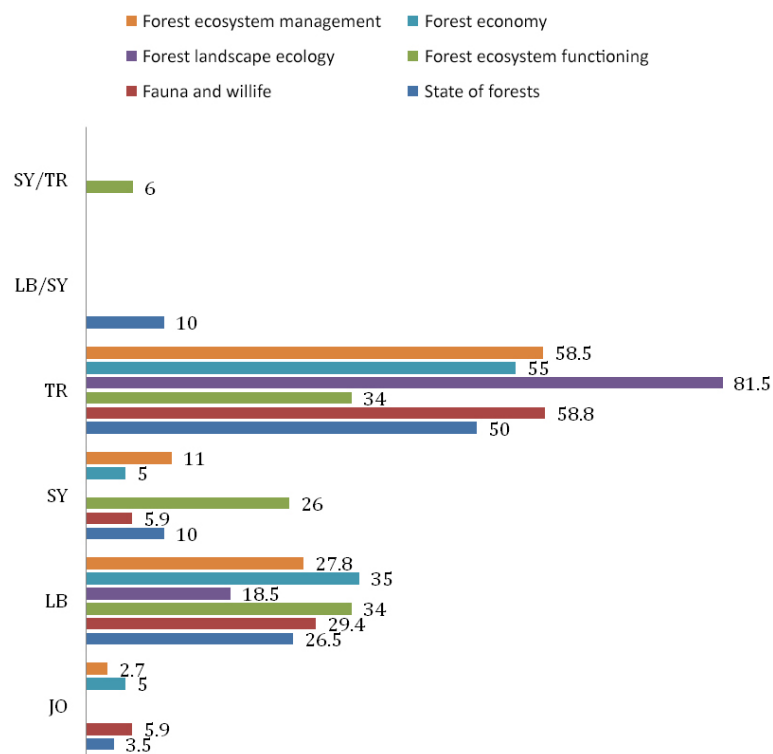


Figure 2. Percentage contribution of Jordan (JO), Lebanon (LB), Syria (SY) and Turkey (TR) in the six thematic forestry research areas.

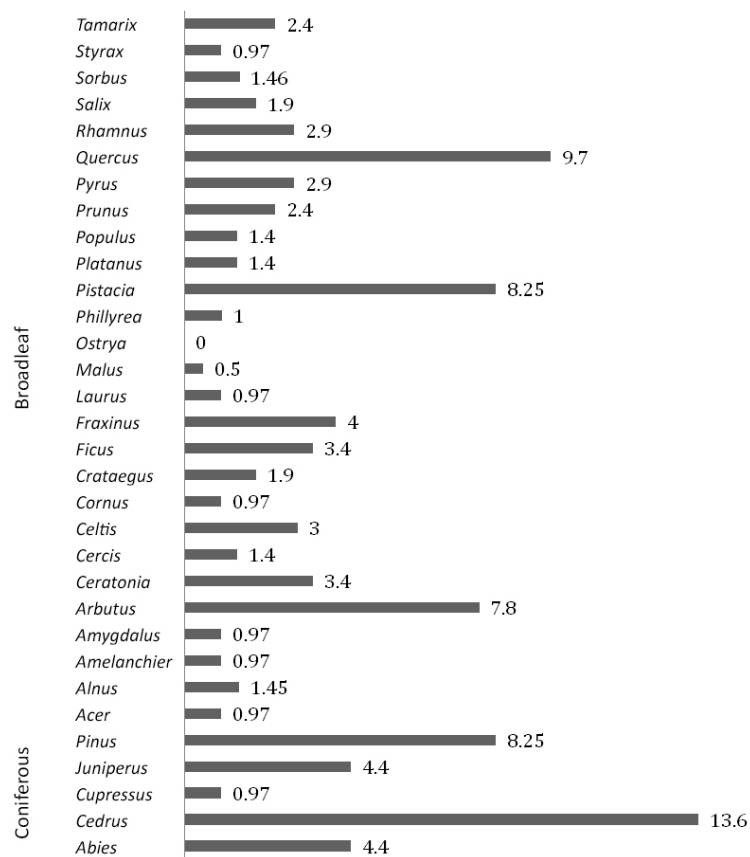


Figure 3. Coniferous and broadleaf tree genera research dominance in EMCs.

which it appears (Bass, 1997; Manolis *et al.*, 2009), whereby conservation interventions question the need for changes in human behaviour (Mascia *et al.*, 2003; Balmford & Cowling, 2006). In the EMCs, the challenges for leadership in forestlands conservation are numerous. The recorded achievements in forest conservation in the region, as in species conservation elsewhere (Black *et al.*, 2011) are strongly hindered by emerging problems of policy, hierarchies, bureaucracy, accountability, and cross-sectoral cooperation. Meanwhile, it has been acknowledged nowadays that environmental related goals are met more effectively when based on interdisciplinary approaches (Balmford & Cowling, 2006; Brown *et al.*, 2015), with ‘T-shaped’ scholars and practitioners; those who are ‘able to cultivate both their own discipline, and to look beyond it ‘where breadth and depth are key’ (Brown *et al.*, 2015). That might be promising in the region at national and regional level with the recent collaborative research programmes and initiatives that are bringing together people from different disciplines. A new ‘mindset’ could be to rethink academic forestry related programmes and to transform the approaches adopted in handling forest conservation and management to aim for more inclusiveness leading to stronger knowledge and successful practices in forestry.

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