

# The Latest on Mediterranean Forests

N°17 March 2010



## Editorial

What is the point of regional cooperation for Mediterranean forest ecosystems?

In relation to biodiversity, the Mediterranean region is considered to be one of the world's "hotspots". Mediterranean woodland ecosystems provide a large part of the outstanding richness of the Mediterranean region's biological heritage and contribute to its attractiveness for tourists and visitors. In numerous areas around the Mediterranean Rim, forest ecosystems also play a role in the struggle against poverty, in the socio-economic development of rural areas, in ensuring food supplies for the population as well as maintaining a large array of environmental services (biodiversity, quality of the landscape, conservation of the water resource, fight against deterioration of soils...). These ecosystems have been fashioned over a very long period by human activity and throughout centuries have proven their great resilience in the face of change due to man's activity.

Today, however, they are being confronted with a threat greater than anything previously witnessed: because they will have to overcome the effects of climate change at the same time as the population forecast around the Mediterranean Rim will rise significantly between now and 2050. In this context, and given a period of time much shorter than was available for earlier changes, how can we ensure the adaptation of these ecosystems to the new stresses consequent on climate change and also sustain the ongoing availability of the whole range of goods and services such ecosystems provide to the population around the Mediterranean?

To meet the challenge, it is fundamental that the sustainable management of forests once again occupy a central role in policies for the various sectors (agriculture, water, energy, research, land use and regional development...) and, also, that local residents be involved to a greater degree in the design and implementation of national and regional forestry policy. Given the context, regional cooperation as it has already been fostered for many years by the FAO committee *Silva Mediterranea* is more than ever relevant for the contribution it can make to the vital adaptation of forestry policy for overcoming environmental and climatic constraints. As in other regions of the world, the exchange and sharing of experience and the pooling of resources will be essential at the level of the whole Mediterranean Rim to accompany the efforts of individual countries in developing new forestry policies.

**Moujahed ACHOURI**  
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## Recently, IAMF took part in...

**Montpellier (France)**  
**December 15 2009**

Jean Bonnier, Executive Secretary, took part in the technical meeting reporting on "Silvipastoralism, a big plus for livestock farming and getting the most out of woodland areas in the South" (CAS-DAR).

**Freiburg (Germany)**  
**February 25-26 2010**

Francisco Castro Rego, Administrative Board member, attended the closing seminar of the European Fire Paradox project.

**Tunis (Tunisia)**  
**March 15 2010**

Abdelhamid Khaldi, Administrative Board member, represented our Association at the 7<sup>th</sup> annual conference of the FEMIP on "Research-Development and innovation, key to sustainable development around the Mediterranean".

**Lisbon (Portugal)**  
**February 11 2010**

Jean Bonnier took part in the feedback workshop reporting on the European Fire Paradox project that was held by the Portuguese Association for Forestry Science (SPCF) and the Centre for Applied Ecology "Baeta Neves" (CEABN).

**Paris (France)**  
**March 9 2010**

Louis Amandier, Administrative Board member, participated in the workshop of the AFORCE network "Forest adaptation to climate change". The topic was "Which methods to use in order to improve the description of forest sites?"

**Bastia (France)**  
**March 25-26 2010**

Ana Fornazar, Administrative Board member, attended the seminar of the European co-operation project "Model Forest" (MED).

## Membership and/or subscription form

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# The organization of forestry in Lebanon

by Magda Bou Dagher Kharrat, Saint-Joseph University, Beirut (Lebanon)

## Geographic and ecological characteristics

Lebanon stands in the west of Asia, on the eastern seaboard of the Mediterranean (33°50' N and 35°50' E). It borders on Syria to the north-east and Israel/Palestine to the south. Its area is 10,420 km<sup>2</sup> and has 225 km of coast.

Lebanon is formed of two mountain ranges: Mount Lebanon (highest summit in Lebanon, 3,083 m) and Anti-Lebanon (2,814 m), separated by the Beqaa Valley. The Anti-Mount Lebanon range separates Lebanon and Syria.

Mount Lebanon is made up of hills and valleys and watercourses that start up in the snowcovered mountains. Twelve of the fifteen watercourses which wend their way through the valleys flow into the sea but they often run dry during the hot season. Even so, richly varied and lush vegetation has developed (Photo 1).



Photo 1: View of a northern part of Mount Lebanon with valleys cutting through - Photo: M. Bou Dagher

The country's climate varies considerably depending on altitude and location. The climate is Mediterranean, with hot dry summers and cold damp winters that bring snow to the summits. Seasonal rainfall is very uneven across the country (200 mm to 1,400 mm). Several areas get no rainfall for more than six months.

Climate change in the Lebanon has manifested itself by a lengthening of the dry season. Rainfall has also been affected: though average annual precipitation has not changed, it is now concentrated over fewer days, 70 rather than 90 on average, resulting in less absorption by the soil and, consequently, a decrease of groundwater as well as erosion, landslides, major flooding, etc. Overall, this makes for a trend towards desertification.

## Forest cover

At present, Lebanon is designated as having very

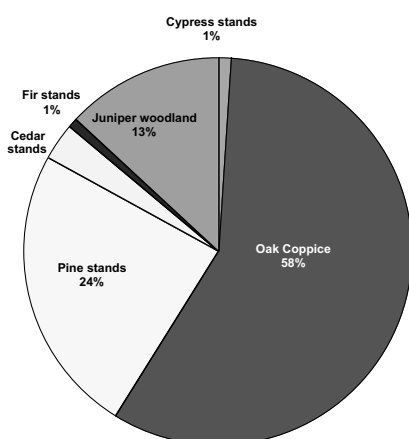
little woodland area. Forests are open and fragmented. 80% of the highly urbanised population lives in cities. In 2005, the total area under forest (plots >0.5 ha with trees >5 m, the canopy covering more than 10% of the area or with trees capable of reaching such dimensions) was estimated to be 139,376 ha, or 13.2% of the country's land area (FAO 2001 criteria). The forest cover is classified in 3 types: broadleaved (78,840 ha, 56.6%), coniferous (43,657 ha, 31.2%) and mixed (16,879 ha, 9.9%).

The remaining wooded areas amount to 11.3% (108,378 ha) of the country's total woodland cover (see Fig. 2, p.6).

## Forest species and their distribution

The Lebanese mountains stand out for their wealth of species which are considered to be relicts of earlier plant cover defined as a humid type. These species continue to grow in a sporadic fashion in surviving forests. Such species include:

Fig. 1: Percentage of different types of Lebanese forest



*Acer tauricum*, *Acer hermo- neum*, *Fraxinus excelsior*, *Ostrya carpinifolia*, *Rhododendron ponticum brachycarpum*, etc. For many of these species, for example *Abies cilicica* and *Quercus cerris*, the mountains of the Lebanon form the southern boundary of their natural habitat.

The most frequent and widely-spread species in the Lebanon are: *Quercus calliprinos*, *Quercus infectoria*, *Quercus cerris var. pseudo-cerris*, *Juniperus excelsa*, *Cedrus libani*, *Abies cilicica*, *Pinus pinea*, *Pinus halepensis*, *Pinus brutia* et *Cupressus sempervirens*. Lebanese forests (Fig. 1) host a large number of aromatic and/or medicinal plants.

These species are classified by altitude on the basis of bioclimatic zones (Photo 2). In fact, from a botanical point of view, Lebanon divides up into two ensembles: Mediterranean and pre-grassland Mediterranean, corresponding to Mount Lebanon and Anti-



**Photo 2: Transition from cedar to juniper at high altitude in the Horsh Ehdén Nature Reserve - Photo: B.C. Douaihy**

Lebanon. The classification of the plants from the various bioclimatic zones is detailed in Table 1 below.

Lebanese cedar stands have been the subject of genetic research whose aim has been to assess their genetic diversity with a view to conserving the species and, also, to distinguishing the Lebanese from the Atlas Cedar. Seed-bearing stands displaying great genetic diversity have been identified. The degree of resistance to drought has also been studied and genetic markers now exist permitting a follow-up of the genetic resources used in

replanting. It would appear that as yet the genetic diversity of the stands gives no cause for worry but their fragmented configuration puts at risk those species which take refuge in them, notably the few rare mammals that still remain in Lebanon.

Studies on *Juniperus excelsa* are under way, aiming to improve its rate of germination, foster its use for afforestation at high altitudes and examine its genetic diversity.

## Forest ownership

Forests and woodlands in Lebanon grow on publicly- as well as privately-owned land (Table 2); most are on privately-held land (around 60% of forests and 80% of woodlands are private). Both the limits of plots as well as landholding registration are the source of disputes and confusion. The dif-

**Table 1: Altitudinal vegetation zones in Lebanon**

Bioclimatic zone		Altitude in m	Dominant species
Mediterranean ensemble	Thermomediterranean	0 – 500	<i>Ceratonia siliqua</i> , <i>Pistacia lentiscus</i> , <i>P. palestina</i>
	Eumediterranean	500 – 1 000	<i>Quercus calliprinos</i> , <i>Pistacia palestina</i> , <i>Pinus pinea</i> , <i>P. brutia</i> , <i>Cercis siliquastrum</i> , <i>Styrax officinalis</i>
	Supramediterranean	1 000 – 1 600	<i>Quercus calliprinos</i> , <i>Q. infectoria</i> , <i>Pinus brutia</i> et <i>P. pinea</i>
	Mountain Mediterranean	1 500 – 2 000	<i>Cedrus libani</i> , <i>Abies cilicica</i> et <i>Juniperus excelsa</i>
	Oromediterranean	> 2 000	<i>Juniperus excelsa</i>
Pre-grassland Mediterranean ensemble	Pre-grassland Mediterranean	1 000 – 1 500	<i>Quercus calliprinos</i>
	Supramediterranean pre-grassland	1 400 – 1 800	<i>Quercus calliprinos</i> , <i>Q. infectoria</i>
	Mountain Mediterranean pre-grassland	1 800 – 2 400	<i>Juniperus excelsa</i>
	Oromediterranean pre-grassland	> 2 400	<i>Juniperus excelsa</i>

Reference: PNUE - MoA 1996. Etude de la biodiversité biologique du Liban. Projet : GF/6105-92-72. Flore terrestre, 3, 147

ferent types of landholding in Lebanon are as follows:

- ✓ **Mulk** are private holdings belonging to individuals;
- ✓ **Macha'a** are municipally owned and are managed by the local council or commissions;
- ✓ **Waqf** are owned by religious communities;
- ✓ **Amiri** are lands owned by the state.

### Risks and Threats

The main risks confronting Lebanese forests are felling, over-grazing and urban development. Forest fires also pose a threat to the ecosystems, their frequency and ferocity jeopardising the very existence of the stands. For example, wildfires in 2007 resulted in the loss of 2% of national forest cover (*Statistical Analysis for Fires in Lebanon for the Year 2007, Ministry of the Environment*).

These problems of deterioration of the soil and deforestation have not just appeared over the last few decades; it is a process that began over a

century ago and continues into the present. An absence of close checking and suitable legislation, increasing demands by the population and a lack of awareness of the negative impact of bad management have led to the current alarming situation. Deforestation, frequently followed by over-grazing and hardpanning of the soil, can be considered as the main man-made cause for the loss of groundwater in Lebanon. The high altitude mountain areas are highly deteriorated and are characterised by shallow soil alternating with rocky outcroppings (Photo 4). The diversity of the flora and the struc-

ture of the natural plant cover are in constant decline.

### Forestry policy

In order to safeguard the valuable elements of the country's natural heritage, the Ministry of the Environment has taken certain concrete steps: setting up a system for protecting natural areas in accordance with national and international criteria and international conventions signed and ratified by Lebanon, in particular the Convention on Biodiversity; the fight against desertification, etc. At present, Lebanon has 12 protected forests along with 8 nature reserves, five of which are mostly forest (Photo 3).

Over the last fifteen years, Lebanon has also made clear its political commitment in favour of forests by enacting new forestry laws. Forests are managed by two ministries: the Ministries of Agriculture and the Environment. The first is responsible for development in terms of plant resources. A Department of Rural Development and Natural

Table 2: Ownership of forests and woodland in Lebanon

Owner	Forest (ha)	Woodland (ha)
Private	84 183	86 702
Public	53 799	14 956
State	38 189	
Municipal	13 938	
Religious communities	1 672	
Unknown	1 394	6 720
<b>Total</b>	<b>139 376</b>	<b>108 378</b>

Reference: National forest and tree resources assessment 2003-05 FAO, (TCP/LEB/2903)

Photo 3: Horsh Ehden Nature Reserve - Photo: M. Bou Dagher



Resources exist within the Ministry of Agriculture; this is the entity responsible for the forestry sector, backed up in the protected areas by forest wardens. The Ministry of the Environment's approach is focused on the protection of genetic resources.

In 2001, the Ministry of the Environment set up a national reforestation plan covering a five-year period. 305 ha grouped in 23 sites have been replanted with native Lebanese species. Other projects are under way to bring the country's total forest cover to some 20%, as the objective to be reached in the region.

Besides the two ministries, NGOs participate in re- and afforestation activities. International funding and private sector contributions have been forthcoming. However, the plantings have often been limited to a small number of species that are easy to reproduce in the nursery (cedar and pine). This practice seriously limits biodiversity and is especially worrying in relation to

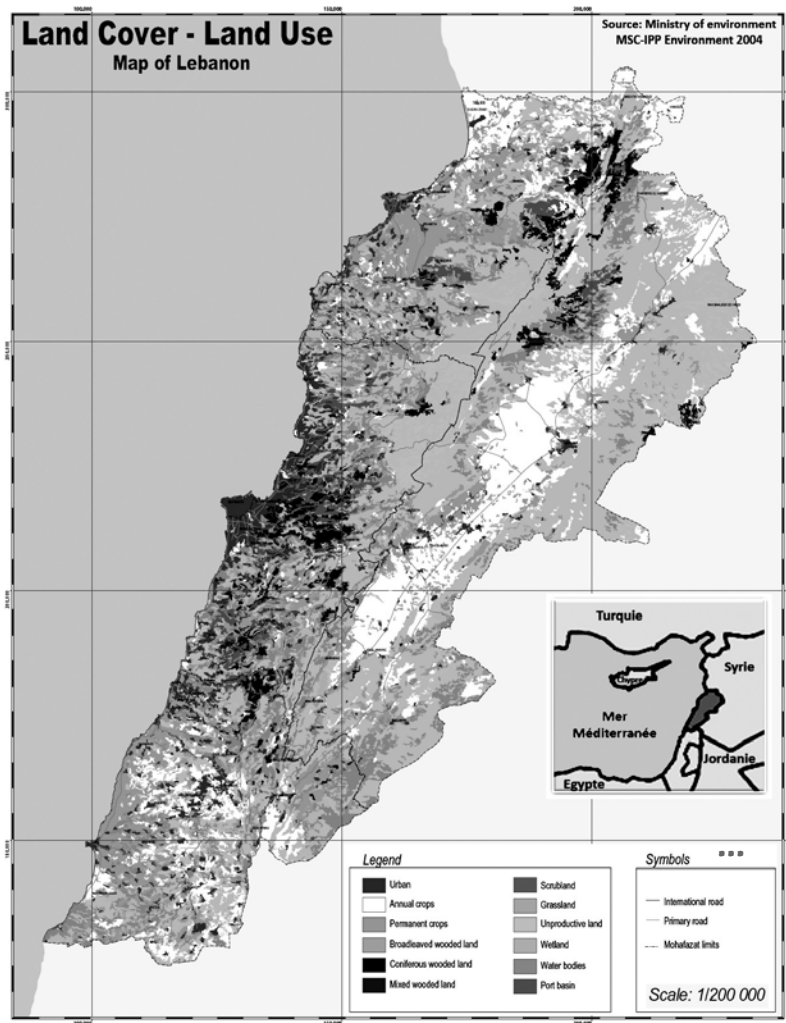


Fig. 2: Land use map of Lebanon

bush plants characteristic of Mediterranean ecosystems. The initiative of the NGO "Jouzour Loubnan", which has

set up a laboratory for the conservation and germination of seeds with the aim of supplying the requisite seedlings of these bush species, is encouraging and should be generalised throughout the country.

Photo 4: Last specimens of *Juniperus excelsa* in a deteriorated area at Aarsal, Anti-Lebanon - Photo: M. Bou Dagher



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## ... the *Silva Mediterranea* Committee

In accordance with its brief, the FAO maintains several official committees involved with forests. The role of these bodies is to pinpoint problems and provide technical and policy advice to the FAO and to committee members and others involved in forest management. The committee that oversees the Mediterranean Rim is *Silva Mediterranea*. In April 2008, at their official meeting in Sofia (Bulgaria), the member States decided to impart renewed drive to *Silva Mediterranea*. They recommended the implementation of action plans (validated in 2009) for the period 2009-2012 based on the six following work groups:

1. **“Forest wildfire”**, with a programme focused on the prevention of wildfire risk by improvements to silvicult-

ural methods, as well as on research to optimise the resilience of woodland Mediterranean ecosystems in the face of climate change;

2. **“Cork Oak”**, with activities focused on diversifying cork oak production and its related industries, enhancing communication around the CORK@MARK label along with the promotion of goods and services deriving from cork oak landscapes;

3. **“Forest management and sustainable development”** with activity centred on the regional-level management of woodland Mediterranean ecosystems;

4. **“Genetic resources for Mediterranean forests”**, with activities aimed at promoting the conservation of endangered species and main-

taining genetic diversity in order to retain the adaptive capacity of ecosystems faced with climate change;

5. **“Mediterranean forests and climate change”**, with an action programme focused on evaluating the stocks of carbon and measuring the impact of climate change within forest ecosystems;

6. **“The mechanisms of sustainable funding”**, with an action plan designed to obtain financial resources in order to reinforce regional forest-related cooperation and foster the mechanisms for obtaining a financial return for environmental services.

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<http://www.fao.org/forestry/silvamed/12989/en>

## ... a new member

With each new issue, *“The Latest on Mediterranean Forests”* will introduce a new IAMF member



**Salvatore Angelo Todde** joined the IAMF in 2009.

A geologist in Sardinia (Semi-Autonomous Region) where he has worked for more than 30 years, in particular on questions in various fields related to environmental protection.

From 1978 to 1992, he was involved in the protection of surface and ground water, helping to set up a detection network for determining the quality of rivers, lakes and aquifers. During this period he

implemented the use of IT systems for the environment under the aegis of the Italian National Research Council's Water Research Institute.

Later, he worked on protected areas and parks in the region, taking part in the establishment of the Natura 2000 network and in setting up an umbrella body for parks, protected marine areas and natural heritage sites.

He has been responsible for several EU projects within the framework of the LIFE and Interreg I and II programmes, notably as the “Vegetatio” project leader in Sardinia (website: [vegetatio.net](http://vegetatio.net)).

From 1998 he was deputy director for the protection of soils and civilian protection for which he set up the network's regional radio.

As the technical manager of the Regional Operational

Programme for questions related to geo-hydrological risks, he designed action plans and programmes.

At present, Salvatore Angelo Todde is in charge for the Region of the “Model Forest” project (MED Programme) whose aim is to build up a Mediterranean network of Model Forests. He has given the project considerable impact in Sardinia. In particular, he coordinated the work behind the Sardinia Region's Forest Charter (Piano Forestale Ambientale Regionale).

He has published many articles in numerous scientific and technical journals.

As well as Italian, he speaks fluent French and Spanish.

You can contact Salvatore Angelo Todde at:  
[toretodde@gmail.com](mailto:toretodde@gmail.com)

## Mediterranean forests, the talk of the town!

For more details and the latest updated information, don't forget to check the diary on our website ([www.aifm.org](http://www.aifm.org)).  
And don't forget: tell us about any event that doesn't appear in the diary - it will make it that much better!

### **EFIMED Annual Meeting**

14-16 April 2010 - Antalya (Turkey)

Website: <http://www.efimed.efi.int/portal/1205>

### **IAMF Annual General Meeting**

26 April 2010 - Bari (Italy)

Contact: [info@aifm.org](mailto:info@aifm.org)

### **3<sup>rd</sup> Seminar of the European co-operation project Qualigouv**

27-29 April 2010 - Taranto (Italy)

Contact: [filippo.bellini@provincia.ta.it](mailto:filippo.bellini@provincia.ta.it)

### **CIHEAM Advanced Course "Adaptive management of Mediterranean forest ecosystems for climate change"**

10 May 2010 - Zaragoza (Spain)

Website: [http://www.iamz.ciheam.org/en/pages/paginas/pag\\_formacion6.htm](http://www.iamz.ciheam.org/en/pages/paginas/pag_formacion6.htm)

### **International Conference "People, Forests and the Environment: coexisting in harmony"**

25-27 May 2010 - Casablanca (Morocco)

Website: <http://sylvamonde.110mb.com/welcome.htm>

### **2010 VIVEXPO: Biennial of cork and Mediterranean forest**

18 June 2010 - Vivès (France)

Contact: [contact@institutduliege.com](mailto:contact@institutduliege.com)

### **International Conference on modelling, monitoring and management of forest fires**

23-25 June 2010 - Kos (Greece)

Website: <http://www.wessex.ac.uk/10-conferences/forest-fires-2010.html>

### **23<sup>rd</sup> IUFRO World Congress**

23-28 August 2010 - Seoul (Korea)

Website: <http://www.iufro2010.com>

### **International Conference "The management and conservation of continental biodiversity in the Mediterranean region"**

11-13 October 2010 - Tlemcen (Algeria)

Contact: [med.biodiv@hotmail.com](mailto:med.biodiv@hotmail.com)

### **1<sup>st</sup> International Conference "Silvo-pastoral resources and sustainable development in the Mediterranean region"**

19-21 October 2010 - Tabarka (Tunisia)

Website: <http://www.iresa.agrinet.tn/cirs2010/#a5>

### **6<sup>th</sup> International Conference on Forest Fire Research**

15-18 November 2010 - Coimbra (Portugal)

Website: <http://www.adai.pt/icffr>

### **5<sup>th</sup> International Wildland Fire Conference**

9-13 May 2011 - Sun City (South Africa)

Website: <http://www.wildfire2011.org>

*This issue was published with help from the following partner organizations:*

