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REGISTRATION FORM

forum  synergies

SUSTAINABLE FORESTRY

INSIGHTS & VIEWS FROM THE MEDITERRANEAN

INSIGHTS & VIEWS FROM THE MEDITERRANEAN * WEBINAR REPORT





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BACKGROUND

Sustainable forestry is one of the topics Forum Synergies is focusing on. Initially four workshops were planned to cover main European forest types. The first three were held in: the UK, Serbia in 2016 and Estonia in 2018. This report covers the fourth online event which examined forestry in the Southern Europe/ Mediterranean Region.

SHORT HISTORY

After an inaugural meeting in 2012 a small working group started to plan the activities and set up a workplan. This group brought together representatives from 4 countries who agreed a programme to deliver four workshops based around the following **topics**:

- To raise **awareness** of the different services provided by sustainable forest management
- To analyse **strategies** of how forests can be a lever for local development in rural communities
- To share **experiences** of how rural communities are involved in looking after woodlands
- To give local actors and authorities better **access** to practical knowledge about sustainable forest management

We wanted:

To understand and communicate what sustainable forestry means in practice.

To disseminate the **EU Forestry Strategy** amongst practitioners and civil society.

To help formulate realistic, complementary, and consistent **policies in and between member states**.

Propose **actions** and recommend **support**.

FACTORS OF INFLUENCE FOR FORESTRY

We have identified so far these **main elements** which are important factors in the context of sustainable forestry and which will have to be taken into consideration in the process of discussions:

- Sustainable management across the main European forest types (Mediterranean, Central European, Temperate, Scandinavian)
- Dissemination of good practice at stakeholder level
- State Action Plans and programmes
- Member state coordination/ cooperation/ consistency at the stakeholder level and where appropriate try to link up rural development funding between and across state boundaries to improve consistency of management, sustainability, and communication
- The role of forests at the heart of Europe's Green Infrastructure and in delivery of the 2020 Biodiversity Strategy and the Green Deal.
- Promotion of woodland and wood products and the communication of forestry benefits to decision makers and civil society.
- The cultural role of woodlands to communities and in the landscape
- The role and importance of small woodland owners
- The development of information systems
- Climate Change mitigation
- Forestry policy coordination at the National and European levels
- The impact of forests as a source for "green electricity" and as a 'renewable' resource

- The "access to forests" as an upcoming conflict between big companies and small owners.

RESULTS OF PREVIOUS WORKSHOPS

1st workshop, 17-20 March 2016, Milverton, UK

45 participants from 10 countries met in Milverton, Somerset in the UK.

The UK workshop examined issues of forestry in a National Park with issues of public access, landscape protection and invasive species such as rhododendron and Grey Squirrels (*Sciurus carolinensis*). In the first workshop we discussed many different aspects and definitions of forest management and resolved not to strive for any standard definitions of sustainable forest management, but rather to focus on the values and principles which may guide the efforts to achieve sustainability, which we see as a process rather than a static measurable condition.

We therefore agreed upon four key principles against which forestry should be measured and assessed to gauge its sustainability:

- A Holistic respect for the health of woodlands and forests as natural organisms and systems, which have a validity and even sanctity in their own right, regardless of human intervention
- A sense of stewardship of forests on behalf of humankind now and in the future, rather than selfish or short-term exploitative use of forests
- A sense of communal responsibility for, and pride in, the forests; and of fairness in the provision and allocation of forest-based benefits and resources
- A global perspective, based on care for all the world's forests and on awareness of the fragility of global ecosystems and climate.

These principles need to be held against the competing interests in forests from those who make a living from woodland products to those people who live in and around them through to the wildlife that depends on the habitats that woodlands create and maintain.

We need dialogue about all these interests to ensure that they are complementary and not competitive.

It was also agreed to use these 4 Principles as the foundations for the future workshops.

2nd workshop, 10-13 November 2016, Tara National Park, SRB

30 participants from 10 countries met in the Tara National Park in Western Serbia to discuss the state of forestry in the Balkan Region.

The issues also revolved around forestry in National Parks. We were keen to see the condition of forests and understand how sustainable and resilient they were in the face of many rapid changes. In the context of a post Socialist environment, we wanted to understand how forestry was operating within protected areas, how it was working for private woodland owners and what contribution it was making to the sustainable development of mountain communities.

Over the two full days of the workshop, we visited the National Park and areas of High Nature Value as well as small local businesses that were dependent on forestry. Overall, we found that, while the forestry sector was functioning, there were many challenges and problems that seemed to be growing rather than receding. For example, relatively few private owners manage their woods except for some firewood and there is a drift of younger people to the cities leaving an older population behind which is exacerbating

this issue. Climate change is a significant factor with an increasing frequency of dry years leading to more fires and a build-up of damaging pests like the spruce bark beetle. There seems to be very little support for forestry from the National Government and so state forests and national parks have to be self-financing. This is being achieved but, in the Tara National Park the authority is increasingly having to juggle timber sales with the management of public access. About half the land is owned publicly and managed by the National Park with the rest in private hands. Unfortunately, rural depopulation and poor land ownership records mean that coherent management across the Park is difficult particularly when managing the fire risk.

Overall, it was a fascinating insight into an important rural sector in a country that aspires to join the EU. Other than designating Natura 2000 sites there is no obvious driver to increase Government engagement in the forestry sector. However, there will be funds to support and encourage investment to boost the economy. This will need to be handled very carefully as there is a real risk that external investment would lead to greater efficiency and higher yields but deliver fewer jobs and less money being retained in the local economy.

The workshop concluded with several recommendations such as having a reliable land ownership register, raising awareness among local people and politicians and the need to secure more robust financial support.

3rd workshop, 18-21 October 2018, Alutaguse Parish, EE

28 participants from 9 countries met in Alutaguse Parish in Estonia to discuss the state of forestry in Estonia and northern Europe.

The Estonian workshop examined the economic pressures on natural habitat and particularly the felling of old woodlands to supply the pulp mill. Participants discussed the Pressures on Estonian forestry in some depth and there was a general consensus that Government policies for short term economic objectives were damaging and leading to potential long-term degradation of the forests. This would affect local communities, wildlife, and the general environment in Estonia. There was agreement about the lack of awareness of these long-term impacts which needed addressing urgently.

Participants were welcomed by Forum Synergies and their local partners ELF (the Estonian Fund for Nature) who were keen to show us the pressures and impacts forestry was having on the rural environment. Over the two days of the workshop visits were made to a modern industrial pulp mill, a traditional craft enterprise and the woodland habitat of the endangered Flying Squirrel (*Pteromys volans*).

Participants showed great interest in the sustainability of the pulp mill operation and in particular its high energy requirement and the fact that it utilised aspen that was over 30 years old. Traditionally this had been a difficult timber to sell but now, partly due to the demands of the mill, it was being harvested at a fast rate and there was serious concern that this would reduce the amount of older aspen upon which the Flying Squirrel depended. Indeed, it is feared that unless there is a significant change in forestry management and protection the Flying Squirrel will become extinct in Estonia within 5-10 years.

Although forest habitats in Estonia are protected there appeared to be a rather random system of designation and protection which can lead to clear felling in and around protected areas. This is causing increasing concern because of the apparent economic priority on timber production and sales over environmental or social importance. Participants were clearly concerned that if felling rates exceeded natural regeneration or replanting that the value and heritage of Estonian forests would be seriously damaged.

As part of the workshop there were also presentations about various projects around Europe as well as an insight into the EU's Forestry Strategy and what impact it was having. Interestingly although the Strategy had led to financial support for forestry being made available under Pillar 2 of the Common Agricultural Policy, Estonia was one of three countries which had declined to take advantage of it.

The average age of the participants was lower than the previous workshops and this perhaps reflected a higher level of concern about the long term which was evident in the agreed closing statement:

“We believe that the intrinsic natural value of the forests of Estonia are undervalued and the primary focus on timber production is short sighted and misplaced.

It is our view that the Estonian people should be given a greater opportunity to be involved in the future of their iconic forests and be encouraged to undertake alternative and sustainable activities like health promotion, tourism, wildlife protection and climate change mitigation.

We encourage the Estonian Government to establish a National Forest Plan than incentivises sustainable activities, protects vulnerable habitats and species and benefits all aspects of this national resource.”

THE 4TH WORKSHOP: INSIGHTS & VIEWS ON THE MEDITERRANEAN

OBJECTIVE OF THE 4TH WORKSHOP

Originally it was proposed to be held in Spain in late 2019 or early 2020. Unfortunately, funding issues compounded by the Covid Pandemic meant that a face-to-face meeting was not possible and therefore partners from across the Mediterranean were interviewed remotely and invited to an on-line Workshop.

The objective of the 4th Workshop was to understand the general situation around forestry in the Mediterranean and assess its sustainability against the 4 Principles.

The Mediterranean covers a huge area but in general has a common climate but different ecoregions and biomes so we were keen to understand if there were shared issues especially in relation to climate change. We also wanted to discover whether any of the issues raised in the previous workshops were relevant to Mediterranean forests.

FEATURES OF THE 4TH WORKSHOP

This webinar - held as a 2 hour zoom event - gave the floor to actors having practical experience in sustainable forestry and will draw a link to the EU Green Deal and strands for action.

Participants

40 people from 18 different countries registered for the event and 28 finally participated.

Procedure of the webinar

After a short introduction there was a presentation about the origin of the workshop series and the outcomes of the first three.

There were then three detailed presentations from projects in Portugal, Spain and Croatia which helped set out their local situation. This was followed by two shorter presentations from Spain and Greece.

In the group discussions and feedback round participants were then invited to

- 1/ Reflect on the presentations and how they fit with the 4 Principles at Local, Regional and National levels.
- 2/ Identify issues and solutions at Local, Regional and National levels.

Finally, there was a summary of the presentations and the points raised.

It is intended that these will be analysed in combination with the previous workshops to form the basis of a final workshop that will discuss how they link to the political level and the Green Deal.

CONTRIBUTIONS

Forum Synergies' Sustainable Forestry programme: goals and activities

Gwil Wren, UK, gave a presentation about the origin of the workshop series which took place at a meeting in Provence in 2011. This was followed by the outcomes of the first three workshops including the initial one in the UK which agreed the 4 Principles¹ and how they had then been applied in the Serbian and Estonian Workshops. The elements of his presentation are included in the previous chapter "Results of previous workshops".

Contributions from practitioners and projects

Reflorestar, Susana Guimaraes, Portugal

The 2017 wildfires in Portugal burned some 442 thousand hectares of land and claimed 114 lives according to ICNF statistics. From the ashes of this devastation rose Reflorestar Portugal, a national network for forest and ecosystem regeneration. The idea is to empower individuals and local communities to act, and to make people aware of their deep relationship with ecosystem regeneration and food production systems.

There is a growing interest in agroforestry which has been fuelled by the "Encontro pelas Florestas" which has been initiated by Reflorestar.

Every two years "Encontro pelas Florestas" The Gathering for the Forest is held. This is a professionally facilitated 3 day event to raise awareness, offer training and promote networking. In 2017 there were 80 attendees and 150 in 2019. The result has been a stronger environmental movement with groups forming to set up projects and establish long term collaboration.

There is also a growing interest in [syntropic agriculture](#). This is the opposite of entropy which breaks things down - syntropy brings energy together to create life. The 2 forces work together to help regeneration without water or fertilisers but needs humans to act as humans!

This is beyond agroforestry where the human is welcomed into the eco system as part of it. It promotes cooperation between species - animals and plants - to be healthier, avoid diseases and plagues through a mixed diversity of species and management.

It involves

- 1/ Observing interconnections
- 2/ Recognising that the human has an ecological function, but historically instead of being a part of the system we started to disrupt and degrade it. Syntropy seeks to reverse this.

Portugal has an urgent need for reforestation because 95% of tree species are non-native - mainly pine and eucalyptus which for example make fires difficult to control.

1 See Page 4

To help address this Reflorestar also holds workshops on

- seed collection because the local native species are below critical mass to regenerate
- setting up tree nurseries
- training technicians (there are not enough professionals). They are also trying to get teachers to encourage interest in these careers.

Over the last 3 years 500 students have attended these workshops and 4 pilot projects have been set up across the country in different climate zones. They are looking to bring in more science-based experience to improve understanding of soil improvement, water retention, local eco systems and landscape impact to spread the knowledge more widely.

Overall, the aim is creating a national movement that helps the regeneration of Portugal's forests with a mosaic landscape of agriculture and forestry pockets that will regenerate the soil and water cycle to increase food resilience and sovereignty with adequate habitat areas. Mountains and riverbanks are a priority because of their importance in the water cycle. This is a critical aim because deforestation, especially in the south, has led to increasing Saharisation - the movement of desert conditions northwards. Lack of water is a growing but unacknowledged issue with some southern reservoirs only at 20% capacity. Coupled with this is a lack of appreciation of the importance of trees and forest in the water and nutrient cycles through the creation of humid conditions and infiltration.

Although Covid has impacted the work it is hoped to hold the next “*Encontro pelas Florestas*” in 2022.

Fondacion Monte Mediterraneo, Ernestine Lüdeke, Jonathan Bradley, Spain

The Foundation owns approx. 700ha of *dehesa* (synonymous with the *montada* of Portugal) north of Seville.

Founded 1994 to try to create a model of sustainable management the Foundation has Charitable status. It has also been certified Organic (which is rare) since 1996. Ernestine is president. There is a panel of trustees to approve their spending/ use of any profits (although she said the farm has only ever made a profit in one year). They get a lot of money from various funds including the EU which keeps them going.

Agro-silvopastoral system

Dehesa (from the Latin ‘defensa’ meaning ‘enclosed’) is a man-made environment and a system that is at least 2000 years old, probably much older. The concept of “forest” varies from country to country and in Andalusia, “forest” is very much connected to livestock husbandry, and the “dehesa” in Spain and “montado” in Portugal wouldn’t exist without livestock. So these “forests” are actually silvo-pastoral systems which nowadays form the last semi natural barrier to the desert. As a ‘hybrid’ silvio-pastoral system it is not regarded as forestry because timber is not a main product and because of the tree cover it is not regarded as agriculture either and so subsidies are very small. The current subsidy is 35k euro or 50 euro/ha however there has been a recent rearrangement of ministries and there is hope that there will be a positive move.

For the last 500 years or so the system was ‘feudal’ with private land owned by absentee landlords. Prior to that (under Moorish rule) it was more egalitarian/ less controlled.

Dominant trees in the system are Cork Oak (*Quercus suber*) and Holm (*Quercus ilex*). There is also space for more ‘natural’ garrigue and maquis and FMM have been quite good at creating structural variety (a lot of dehesa is nothing but mature trees with grass or even arable beneath).

Managed dehesa/ montado covers 2m ha in Spain and Portugal but the habitat 'covers' another 3m ha of Spain and Portugal and about 1m ha in N Africa.

In S. France, Italy, Croatia, Albania and Greece *Q. ilex* 'covers' another 4 million ha.

Q. suber has a similar distribution (though is rare in E Italy and the Balkans) with almost all of it in SW Spain and S Portugal.

Dehesa is significant in global climate change terms because of its key role in defending South Iberia against desertification.

Intensively managed it can best be described as a massive orchard. The principle is to create an open woodland where the tree canopies are almost touching. This creates shade whilst also allowing enough light to reach the ground for grass/ pasture to grow. However, it is important to keep the animals moving from place to place to avoid damaging the small trees.

The main trees of value are cork oaks. Once the trees are semi-mature, the bark is removed every 9 - 12 years used for wine bottles, insulation, floor and wall covering and even in spaceships (because nothing man-made can be deformed yet return to its original form). After a period of declining popularity to contamination from Tri-chloro-anisole, a chemical from soil bacterium that taints the wine, cork is becoming valuable again because they found out a decade or so ago how to clean the cork and also how to grind up lower quality cork and reconstitute it.

The Holm Oaks provide acorns which give the Iberico pigs their distinctive texture and flavour.

The pigs also provide a lot of the income that sustains the Foundation. They spend about 7 months in a (large) pen being fed on feed that is brought in, then about 5 months out. They are supported by cows which graze the *dehesa* so pigs can find acorns more easily. There are also a few horses and a few donkeys - used for collecting the cork.

There are also a couple of dozen goats that are in small enclosures. Poultry take the rest and leftovers.

There is also a Merino sheep flock of sheep. This breed used to be one of the most precious animals because of its wool. There are approx. 600 but only a few stay all year because there is not enough grazing due to summer drought. Nearly all go to N. Spain for the summer. The foundation coordinates the movement of 7000 sheep to the north each year and hires grazing and importantly shepherds. FMM is keen to institute a shepherding qualification scheme to help the long-term future of this system. This annual movement of animals to the north and back is very popular locally and attracts interest to the *dehesa* from outside.

Forestry and biodiversity management includes bird and bat boxes and the protection of small trees. FMM has also trialled erosion control using branches and brash and gabions with mixed results.

There are many government-imposed obligations, some that make sense (e.g., cannot cut down trees over 10cm DBH) and some that perhaps do not (provide firebreaks, meaning regular ploughing which in this terrain, causes significant soil erosion/ loss and probably makes almost no difference in controlling fires).

Despite being basically a monoculture, Dehesa can be a very rich habitat and a Bioblitz weekend in 2016 found over 725 species.

The Foundation also takes guided visits and highlight the importance of the *dehesa* in preventing desertification among Spanish and foreign visitors

They also run awareness and training programmes creating habitat enhancements like nest boxes and small lakes. Young people are targeted to educate about sustainability and biodiversity and there is also a language component to help with English.

The Foundation has a training centre to allow people to stay on site. The Foundation uses Agroinclusion to integrate people including those with special needs.

It also runs training for young people from deprived areas to work in horticulture. This has led to a commercial operation which is now employing some of the trainees.

The Foundation also has a research centre which is investigating *Phytophthora cinnamomi* in partnership with several universities. *Phytophthora cinnamomi* is having a serious impact in parts of the *dehesa* and even destroying all the trees causing farmers to give up because livestock cannot be kept, and the land is subject to erosion. But some of their practices are making this worse e.g., selling firewood that is contaminated, ploughing right up to the bases of mature trees and thus damaging the roots (and this includes their cultivated areas, not just in the firebreaks).

There is also the Black Vulture feeding project. Certified deadstock can be left for disposal by neighbouring farmers and hunters.

They do demonstrate the 4 Principles and are hoping that the Green Deal will provide opportunities.

This multi-functional system is the key to making forestry sustainable. It fits well with the trend for rewilding because while profits are low it does manage and maintain the land at no cost.

However, it does not fit within the categories of a modern digital world and so does not attract support.

It is also part of an Erasmus Project with partners from Bulgaria/ Romania/ UK/ Austria/ Germany aimed at developing a training manual for extensive grazing management. The grouping is the Archnetwork².

They also work with a Portuguese partner³ who produces many different organic products from the *dehesa*.

Regeneration of trees in the *dehesa* can be difficult in the more managed areas and soil erosion is an issue. Germination can be patchy depending on the grazing and management pressure. Also, financially the *dehesa* does not produce the income it used to, but its ecological and climatic value is not necessarily valued. It should be noted that *dehesa* never made a huge amount of money, but it did benefit local workers and communities. At one point 60 pigs were herded by one person, but increased intensity has reduced biodiversity.

As a result of its diversification of products and projects FMM can however, employ people and attract volunteers to work the land although the volunteers are supported by EU funding. Unfortunately, the current situation is that Covid has reduced the number willing to come.

Subsidies are very low because it is not regarded as either farm or forest. In Spain the agriculture and forestry are within the same ministry. The current subsidy is 35k euro or 50 euro/ha.

It also needs to be said that not all *dehesa* is biodiverse as some are monocultures.

The land is a part of a Biosphere Reserve and has several nature protection designations.

The underlying problem is to draw attention to the importance of the *dehesa* and its activities like:

- Transhumance

2 <https://archnetwork.org/tag/dehesa/>

<https://archnetwork.org/film-dehesa-a-spanish-agroforestry-farming-system-implications-for-scotland/>

3 Freixo do Meio - Alfredo Cunhal

- Farming
- Cork production
- Training/ Childrens Camps
- Premium Ham

and its importance as an environmental bastion to desertification.

You do not know what you have lost until it has gone so FMM concentrates on attractive activities that engage and interest people.

A European Forestry Policy would be welcome but only if there was room for specialist systems with a framework based on ecological lines with room and specific measures for different forestry and agroforestry eco systems.

Climate change is the greatest challenge. A loss of trees to the desert would be an absolute disaster for Spain and Europe.

Association BIOM, Ivan Budinski, Croatia

There are three main types of forest in Croatia:

- Mediterranean
- Montane/Alpine transitional
- Central European/Pannonian

45% of the country is classed as forest, but this includes large areas of transitional scrub. However, full cover has been gradually increasing since the 1950s.

Forestry management in Croatia

The main forest manager in the sub-Mediterranean habitat areas is the Croatian Forestry Service (CFS) but forests in National Parks have not been managed for over 20 years and they have been left to develop naturally. The CFS is state owned and manages all state forests (c30% of the country).

In the Pannonian and Continental areas, the forests are dominated by Oak with Beech, Silver Fir and Birch in the higher regions. There is also a sub-Mediterranean area away from the coast which is not quite as warm that has Downy Oak, Black Pine, Juniper and Hornbeam.

The Mediterranean zone is dominated by Aleppo Pine and Holm Oak. However, as the pine responds better after fires this is beginning to dominate. Fortunately, this quick regeneration helps reduce erosion.

There has been a long tradition of managing forests naturally, plantations are rare and non-native species were discouraged. After WWII cattle and goat grazing was also discouraged and as a result open country began to develop into secondary woodland and scrub. Therefore, there is a loss of edge and open habitats, and the increasing number of fires is diminishing old growth forests.

Although there is some planting most of the forestry growth is due to natural regeneration. The reforestation was promoted by Government to help produce more wood for fuel but was not well planned in terms of how much of each habitat or grazing land was needed. In particular grazing is not allowed on state owned land and there as there are only small private areas and so there has been a loss of rare habitats and species associated with open ground and extensive systems like vultures and many other bird species. There is also a lack of appreciation of the distinction between forest coverage and forest quality.

Environment and climate change

Fires are a serious problem because of the increase in dry organic matter. Often the fires are set deliberately to clear ground for grazing but can be very serious because they are continuous, they can go beyond the area to be cleared and become very difficult to control. This is much more of a problem in the karst areas rather than flatter farming land. There is a clear need for planning fire breaks and corridors which would increase the open habitat. It is ironic that this increase in forests increases Croatia's carbon footprint because of the susceptibility to fire.

Climate change causes other problems like encouraging invasive species like bark beetle etc. However, there is not a lot of damage in natural forests because there is a wide variety of plants and only one species tends to suffer in localised areas. That said even damage to one species is not good.

Croatia does not have any single species forests and believes that the promotion and maintenance of multi species mixed forest is a good thing. Beech is good at surviving dry summers but the more species the better because something will always survive.

Challenges

At the moment the EU is trying to increase internal food production to reduce imports from Brazil but without damaging our forests. This is a challenge because beech, for example, will not regenerate after a fire so these fires are causing permanent damage and change to old growth forest areas. Therefore, the current situation is that forest areas are increasing but old growth, open and transitional habitat areas are being lost. Prime wood is often exported for furniture making (to Italy). Poorer wood is used for fuel.

There is no real market for paper pulp as the timber is not really suitable.

The CFS has some sawmills and extraction staff but also employs local contractors and mills. This is good for the local economy as it provides the bulk of employment in some areas.

As well as timber the Croatian forests produce:

- grazing for cattle and sheep
- fuel
- fungi (some is collected commercially)
- fruit (although this is mainly collected by local people)
- hunting (there are very strong links)

Hunting rights exist outside protected areas and settlements. They are controlled by the Government and let to local hunting societies and companies who often hold them for many years. The CFS also holds some. These tend to carry on unless there is a serious problem.

Most owners of hunting rights are managed from big cities like Zagreb or Split but there is little conflict with local landowners because of the historical lack of private land rights. Hunters cannot be prevented from entering land.

Nature protection is becoming more important and 'Save our Forests' is becoming a strong message. However the forest is expanding into other habitats threatening or destroying open and transitional areas so there is therefore a need for a policy to recognise the importance of habitat types other than the forest.

Forestry practices also need to be more refined. Previously cleaning could take up to 50% of a forest now it is more likely to be 10-20% which has a lower impact.

Agroforestry does not figure highly.

Reflections from other actors

Lydia Petaloudi, Aristotelian University of Thessaloniki, GR

Approximately 50% of Greece is covered by forest of which most are public.

A large proportion is coppice which the Government is trying to convert to High Forest. A small amount of mixed woodland belongs to the church as it is still used to sustainably support its pastoral activities.

Greece has multiple habitat and climatic types from high mountains to Mediterranean. As a result, there are many different ecosystems with a considerable variety of flora and fauna with quite a few that are endemic. The main tree species are Beech, Oak and Pine although over 50 species of woody plant have been recorded so it is difficult to generalise.

Management problems are exacerbated by a lack of cooperation from the public because environmental education is poor and unpopular laws get disregarded or bent. This leads to environmental degradation and destruction.

In order to deliver a sustainable future, there is a need to focus on multipurpose forestry producing different products.

As well as timber which is often low quality the forests produce:

1. medicinal plants
2. aromatic plants
3. fungi (this is very localised)
4. honey
5. herbs

There is a need to boost interest in these to produce multi-functional forests. This offers an advantage over low quality timber production. However, the country needs expertise to exploit and expand this.

The problem not helped by the lack of a land register, and the forestry inventory only dates from 1992. All this hampers the enforcement of laws.

What maps exist are inaccurate with areas often wrongly categorised (forest, agriculture etc)

There is also a deep-rooted suspicion of the Government and its agencies and laws, regulations and plans are disregarded or ignored leading to issues of

- Arson to clear land
- Overgrazing
- Illegal logging and
- Unregulated construction.

A lack of active management or monitoring is leading to deforestation in some areas which in turns leads to erosion and flooding. The lack of monitoring also means that pests and diseases can go unnoticed.

Lydia has three key recommendations to improve the sustainability of Greek forests.

- 1/ There must be better and active management, monitoring of the forests and their Action Plans. This means following through on initiatives like making sure replanted areas are maintained and not just left to fail.

- 2/ There needs to be a real effort to win the trust of forest communities to increase awareness and provide education about the forests and the benefits of improved management and control.
- 3/ Greece needs to recognise the value of its genetic resources and use them to bring in much needed revenue to support the forests.

Jesús Fernández Moya, Aromas del encinar, ES

Aromas del encinar is a small family and artisan project that seeks to share the natural products derived from the sustainable management of the forests of the Sierra Oeste: these include essential oils for cosmetic and therapeutic use, natural products for natural medicine and condiments and infusions

The project is located in 800ha of Holm oak forest west of Madrid.

Until the 1970s it was a family farm comprising pasture and hunting but unfortunately it is no longer profitable, and the forestry areas have become abandoned.

The income from grazing is now not sufficient and they are looking to invest in the forest to increase income and share its value with local people.

The family have therefore started Aromas del Encinar

The Project has two key aims:

- Sustainable use of the forest
- Share the forest with the people (NB the traditional way of sharing has been through eco-tourism)

To do this they have started collecting aromatic plants like lavender, Penny Royal, Ash Leaves, Majoram, Thyme for use in condiments, infusions, natural extracts and oils. Currently it is a very small-scale self-production operation and marketing is difficult. However, sales are being made and feedback is good. In due course they are looking to expand the range to leaves of oak, rockrose, olive, fig oak bark and rose hips.

The sales pitch is that by buying the product the purchaser is becoming an essential part of the forest management and its helping to conserve its ecosystem.

The aromatics can concentrate the forest in a small bottle or in condiments so as to concentrate a feeling for and protection of the forest even when far away.

Mediterranean forests smell a lot because they are rich in aromatic plants so now you can bottle it and take it home with you to be transported back in an instant! The essence of the forest to share!

The money realised goes back into forest management.

Ongoing forest management is important not least for fire protection. There have not been many fires in recent years, but biomass is increasing and so is the risk.

Traditionally fire was prevented/reduced because the forest was more open and less dense through of grazing and cultivation and the extraction of firewood on 20-30-year cycles. This rotation is now twice the length.

The increased fire risk is heightened because the extra biomass produces more intense fires which require more water, which is in short supply. Ongoing climate change has increased incidence of drought meaning more trees die and therefore a new balance is needed.

The project is starting at a local level because marketing is not a skill they have.

However, they are close to Madrid which gives opportunities for tourism and day visits.

Now the project relies on family and friends for collecting. This has meant a slow build-up of stock feeding into local markets which has met with a good response. The

challenge is now to scale it up. Collection is by hand but the other operations such as thinning will require contractors.

Currently outgoings are low but there is no known Government aid or assistance.

The Project is trying to organise more access for local people to help collect plants next Spring. At the moment Jesus does most of it and it is very time consuming.

Are there any other projects nearby? No. This kind of activity was traditional 100 years ago but there are a few restarting elsewhere. There has been some informal networking to share experiences.

It should be noted that concerns have been raised about the sustainability of commercial collection of plants and the risks of a black market. This is difficult to quantify but it is known that wild collection is better quality than cultivated.

Are there guidelines to prevent over exploitation? Yes, but it is informal and based on local traditional awareness. There is some sustainable certification which Jesus does not have because of cost but you can just follow the standards which are based on common sense - something must be left.....this is not difficult but depends on your motivation.

Jesus has a PhD. He previously worked for a WoodNut company which aimed to expand the use and value of forests beyond timber.

Sustainable Forestry and the climate crisis

Sustainable Forestry and the EU Green Deal - strands for action, Michael Dower, UK

Forestry is becoming of increasing importance in Europe because of its contribution to addressing the twin threats of climate change and loss of biodiversity. The new President of the European Commission Ursula von der Leyen has said “Climate change and environmental degradation are an existential threat to Europe and the world”.

European Green Deal. The EU has launched the European Green Deal aimed at changing the Union into a modern resource-efficient economy with:

- No net emissions of greenhouse gases by 2050
- Economic growth decoupled from resource use (especially those derived from damaging sources)
- Movement to a clean circular economy and
- Restoring biodiversity and cutting pollution (especially plastic and air)

This will be a central part of EU policy over the next programme period, affecting many of the delivery programmes.

EU Biodiversity Strategy. Alongside this is an EU Biodiversity Strategy, because unsustainable practices mean we are losing nature like never before. The global population of wild species has fallen by 60% since 1970 and 1million species are at risk of extinction: scientists call this the ‘sixth extinction’. The strategic aim is that 30% of Europe’s land area will be protected for biodiversity by 2030.

The Role of Forests. In the context of these policies, forests have a crucial importance. They cover nearly half of the EU territory and hold large stocks of carbon, preventing its escape into the atmosphere. In total they absorb 10% of all greenhouse gas emissions each year as well as being home to a high diversity of wildlife. They are therefore major contributors to a robust climate and biodiversity strategy. The EU states, “*Restoring forests, soils and wetlands and creating green spaces in cities is essential to achieve the climate change mitigation needed by 2030.*”

Forestry Strategy. Until now, the EU has not had a formal multinational Forestry Policy like the Common Agricultural Policy or the Regional Development Fund. But the Commission is now taking a very serious interest in the role that forests can play in combating climate change and strengthening biodiversity. A new Forestry Strategy is in preparation, and it is likely that - for the first time - the forestry sector will receive significant EU funding.

Fires and drought. We may welcome the prospect of further afforestation in Europe. But we must also find ways to protect existing forests from the threat of fires and drought. In recent years there have been terrible fires across Australia, California and widely across Europe even as far north as the Arctic Circle. Drought and fires are becoming more severe, extensive and damaging because of the effects of climate change - the drying of the air and of vegetation, the depletion of water levels and supplies to fight the fire- but also because of the lack of management of scrub and undergrowth and the consequent build-up of dry flammable material.

Lack of forest management. Portugal, which has suffered devastating fires in recent years, offers a crucial example of what happens when forests are not managed. Large areas of its forests are in monoculture Eucalyptus, owned by paper companies and receiving very limited management between harvests. The result is that fires rip through very quickly and because Eucalyptus readily regenerates after a fire, the problem just keeps recurring with sometime catastrophic results for people and the natural environment, plus mass emissions of CO₂.

In Scandinavia there are similar issues. Sweden has very large forests which are often a monoculture of conifers. These are planted by distant contractors, there is virtually no routine management, little wildlife value and felling is relatively large-scale by distant contractors using heavy machinery. The result is that there is normally no-one in the forests to detect fires if they occur and to put them out.

Maintaining rural populations. In contrast, Norway has much native forest with high species variety, owned and managed by the State or local people. Norway has a policy of sustaining rural populations and sustainable management of forest by local people. As a result, their forests have high value for wildlife and local economies. The presence of a rural population also means that fires are quickly detected and put out.

In Greece on the island of Evia there are forests of Black Pine, plus the Aleppo Pine which is tapped for resin. This means that workers are regularly in the forest and can keep undergrowth under control as well as spotting and controlling fires very quickly. Unfortunately, this resin tapping is being threatened by Chinese competition. However, a Transnational Woodland Industries project has helped to increase the efficiency of local resin tapping and to add value to the resin, thus sustaining the forest management.

Conclusion. The best way to restore sustainable native forests in areas prone to disastrous fires is to bring back people, re-introduce sustainable management and develop ways to add value to the forests and their products. It is essential to link forestry policies to rural development policies and keep the people in the rural areas. Rural depopulation, especially among younger people, is a major cause of many of the environmental problems we face.

REFLECTIONS AND DISCUSSIONS

How Do The Mediterranean Forests Reflect the four key principles?

A Holistic respect for the health of woodlands and forests as natural organisms and systems, which have a validity and even sanctity in their own right, regardless of human intervention

It is clear that the participants in the Workshop care deeply about their forests as a major and vital component part of the European continent. Nevertheless, there is deep concern about how forests are faring with a lack of coherent policies from governments to protect and enhance them and a lack of empathy for them in many of the general public. In the wider world there seems to be a polarised view that forests are either economically useful or not. So, in the former financial returns are measured in commercial terms and in the latter case they are abandoned and unprotected. More often than not any commercial returns either result in quick profit through over exploitation or an almost subsistence activity that cannot compete (economically) when challenged. Social and environmental contributions are not serious considerations for decision makers and the concept that forests have 'a validity and sanctity in their own right' seems long gone.

That said there is a growing minority who see the Mediterranean forests and forest systems as vital to protect against climate change and also provide free ecosystem services like ground water retention, erosion protection, temperature mitigation as well as general human wellbeing from being in a forest environment. The emergence of syntropic agriculture is a very interesting development and could herald a renewed interest in forests as forests and as a natural and important part of a human's environment.

A sense of stewardship of forests on behalf of humankind now and in the future, rather than selfish or short-term exploitative use of forests

The participants of the workshop were very clear about the value of Mediterranean forests and the need to protect them. It is probably not overstating the case that the management and restoration of forests in the Mediterranean are vital to the continued inhabitation of the region by humans. The threats of desertification, lack of clean water, loss of soil through erosion, increasing temperatures, unpredictable weather and wildfires are clear and present. The important point is to spread this message much more widely and get the concept of forest stewardship accepted and properly 'valued' at the political level. Whether the Green Deal or the EU Forestry Strategy can/ will deliver this remains to be seen.

A sense of communal responsibility for, and pride in, the forests; and of fairness in the provision and allocation of forest-based benefits and resources

In places there is a strong desire to repair and restore the forests and remove the main threats in the knowledge that this will impact positively on people, the environment they (and other creatures) depend on and the economy. The direct economic benefits are not great but the costs of failing to do anything are huge and can be avoided. It is about integrating lifestyles into the forest environment to provide wider benefits for the many. It is also arguable that a low key low impact lifestyle with a safety net would suit some people very well - not so much "dropping out" of the ratrace but rather being

lowered carefully. However, to establish and retain a viable rural forest population would require investment in services and connectivity by governments at local and national level.

A global perspective, based on care for all the world's forests and on awareness of the fragility of global ecosystems and climate.

There is a growing awareness of the damage that is being wrought on forests across the world coupled with an understanding of how this has more widespread impacts. The most well-known example is the loss of rainforest in Brazil and the tropics but the loss of natural European forests is less publicised and in the case of the Mediterranean forests barely acknowledged. The fact is that as climate change accelerates the world's forests become essential to human survival. If humans became extinct the planet would restore itself relatively quickly so in planetary terms human extinction is not a problem. We therefore need to start properly stewarding the resources that this planet provides that allows us to survive and thrive and that includes forests.

Focus on climate change and key points for action

The 4th Workshop in our programme has looked at the situation in the Mediterranean area. We have discussed issues across a large area from Portugal to Greece, some of which are unique to that region and some that were raised in previous workshops.

The principal issue is climate change. Its impact and effects are more marked in the Mediterranean than elsewhere, although the fires in the Arctic show that this will be one of the main threats to forests right across Europe in the coming decades. Drying and drought conditions are causing loss of tree cover and catastrophic fires which are exacerbated by some of the other issues such as lack of management, rural depopulation, unregulated development and poor ownership records. The spread of pests and diseases is also a serious threat that is associated with the changing climate.

Drier conditions are:

- hampering growth,
- causing localised removal of tree cover with risk of erosion and flooding
- destroying diversity and promoting monocultures
- threatening biodiversity
- damaging local economies
- threatening human life

Taking these in more detail.

Hampering Growth

It is clear from tree ring records that trees are wholly susceptible to the climatic conditions during their summer growth periods. The traditional view of the Mediterranean climate has been long hot summers and warm wet winters and many of the endemic species are suited to this. They are drought tolerant to an extent and can survive dry summers on the basis that the winters are mild and wet enough to resupply ground water to meet their summer needs. Unfortunately, climate change has unbalanced this and although annual rainfall has remained stable, rain events have become shorter and more intense leading to increased run off rather than infiltration. There is also the question of increased abstraction to meet human needs which has tended to reduce ground water levels.

It is not clear if there has been much research into this but there is evidence of increased tree mortality which is suggestive of a lack of water at critical time.

The Localised Removal of Tree Cover with Risk of Erosion and Flooding

Under normal natural Mediterranean conditions trees would regenerate in fire or drought damaged areas over a period of time and the natural balance would continue.

Unfortunately, under anthropocene conditions with an associated change in climate this can no longer be guaranteed. Fires are more frequent and are largely a result of human activity, there is less rain and there are other demands on the natural environment. As a result, tree cover does not always restore itself so for example scrub layers proliferate and spread and the species composition is liable to change as in the Croatian example of Aleppo Pine which is now beginning to dominate at the expense of Holm Oak.

This increased scrubby regrowth is more susceptible to fires than established forests meaning that fires can start easily and spread quickly. Since the fire risk from humans (either deliberately or inadvertently) is higher than under natural conditions, fires can repeat over the same area denuding it of vegetation and enhancing quicker run off causing erosion and flooding. These results end up increasing the risk leading to a cycle of regrowth fire erosion (less tree) regrowth fire etc. etc.

Erosion is not a problem where vegetation can regenerate quickly but where it does and is not interrupted by another fire or drought one species can dominate which leads to other issues.

Destroys Diversity and Promotes Monocultures

The emergence of fire exploiting, and drought tolerant species is a real concern. As stated in parts of Croatia Aleppo Pine is beginning to dominate over Holm Oak. In Portugal the imported eucalyptus has really found a niche and, presumably because of its susceptibility to and association with fire, is able to seed readily into fire cleared ground meaning it is now the dominant regenerative tree species in the country leaving less than 5% as natural forest.

In natural conditions monocultures are prone to pests and diseases and it is clear from the evidence of Croatia and other countries that pests like Pine and Spruce Bark Beetle can get a strong hold when there is a limitless supply of the right trees. Interestingly eucalyptus has few European pests or diseases so is only removed by harvesting or fire and the fires can be devastating.

Biodiversity thrives in mixed conditions particularly on margins where habitats meet and overlap. However, monocultures disrupt habitat diversity and with it the suitable conditions for many species. This is a huge problem in delivery of the EU's Green Deal which aspires to "Making nature healthy again and is an ally in the fight against climate change and disease outbreaks. It is at the heart of our growth strategy, the European Green Deal, and is part of a European recovery that gives more back to the planet than it takes away."⁴

This acknowledges the importance of a healthy natural environment to the economy both local and national and gives a direction to a more sustainable future for Europe's forests.

Damaging local economies

It is clear that forests in some parts the Mediterranean area are locally important economically. However, these are predominantly areas where there has been limited external economic investment and where low tech methods of gathering timber and

4 Ursula von der Leyen, President of the European Commission

other forest products for local markets are used. As soon as external investment arrives either as holiday and leisure proposals or to a lesser extent organised logging then the forests lose their intrinsic value because that gets heavily outweighed by 'hard cash'. Once this happens the only driver is economic. Incomes from traditional environmentally benign, low impact (and sustainable) activities cannot compete with large scale investment and so either relocate or cease. Frequently this leads to money leaving the local economy and in some cases the country. Tax regimes could counterbalance this, but none do. The Green Deal on the other hand does offer the opportunity.

Development not only displaces forests but also alters their wider environment. This can be through abstraction of water, separation by roads and infrastructure and increased visitor pressure. In addition, low tech, low return management activities are abandoned in favour of more lucrative leisure-based employment.

The result is that forest around areas of economic development become degraded buffers with all the issues of lack of concern and loss of any sort of control. Timber can therefore be removed; human encroachment will increase and local people have to adapt economically. This can involve selling up and moving as the development area spreads, so the economic investment can also drive rural depopulation.

It is also the case that urban development with regular higher waged employment will attract younger people leaving parents and grandparents behind, who as they age, become economically less active in their local area. This cycle of depopulation leads to eventual abandonment of land or, as in Portugal, the adoption of eucalyptus as the only viable income generator in some areas.

Conversely these urban areas with high seasonal visitor numbers do need local food sources and these can establish in the outer ring. To feed a large seasonal human population requires a lot of water but must be competitive so employs cheap (often seasonal and migrant) labour. These businesses are not always scrupulous about pollution and waste issues.

On the other hand, we have heard about examples for local produce and crafts continuing which give cause for optimism. In Evia (GR) a better method of gathering pine resin has resulted in improved yields which has fought off foreign competition. The wood carving community in Italy seems to have maintained its niche by being a high-quality product. The Aromas del encinar initiative in Spain is emphasising the sensory aspect of a connection with nature to sell its products.

Threats to Human Life

Every year in high summer the news reports on wildfires and nowhere on Earth with vegetative cover seems immune. All these fires cause huge disruption and economic loss and in some cases loss of life. In 2017 a catastrophic wildfire in Portugal killed 67 people. In 2018 83 people died in similar circumstances in Greece - huge fires that became so big that they feed themselves⁵. The lesson is that these types of fires will become more common and more deadly across a much wider range unless action is taken to increase forest and rural management by reversing land abandonment, repopulating forest areas and removing fire prone species.

Fire is not the only threat to human life in the Mediterranean forest area. Where there is intense development ground water can become depleted and in coastal areas there is a risk of contamination by salt water. In addition, poorly regulated agriculture can also result in ground water pollution by pesticides and fertilisers.

5 <https://www.nationalgeographic.com/science/article/how-to-live-with-mega-fires-portugal-forests-may-hold-secret>

Finally, human life can be impacted by increasing summer temperatures from a changing climate, exacerbated by deforestation.

Recommendations

1/ Across the Mediterranean Basin Europe forests offer so much but are regarded so little.

The EU should promote a comprehensive debate at local, national and international level about the value and future of forests in the Mediterranean Region.

2/ This debate must focus on

- the contribution that well managed and cared for forests offer in terms of vital services
- protection against Climate Change and
- the fact that these services are provided more or less for free but receive virtually no recognition protection or support from Governments or decision makers.

The EU should look to provide a framework with financial support for national Governments to implement national Forestry Action Plans in collaboration with neighbouring states.

3/ There is a need for a real effort to win the trust of forest communities to increase awareness and provide education about the forests and the threats of Climate Change and the benefits of improved management and control. Alongside winning trust is the need to support and restore forest communities and make them attractive to live and work in. An active and supported forest population would offer solutions to many of the issues highlighted here - neglect, abandonment, fires and poverty.

The EU Forestry Framework should include a clear requirement that the national Forestry Action Plans must assess and set out to combat climate change impacts through active management and monitoring of the forests and support of the communities that live there. Progress should be reported every five years.

4/ Inadequate land ownership records

Many of the countries highlighted across all the workshops have reported the problem of inadequate land ownership records. This is a result of severe disruption across the continent over the last 100 years but means that forest authorities can have little control or influence outside state owned land. This has led to problems of illegal activity, lack of management and abandonment. These will continue until there is a comprehensive land register or cadastre in each country. Establishing these would give national and local governments more control to introduce and deliver policies such as fire breaks or controlling invasive species across a landscape area.

The EU should look to provide encouragement (with financial support) for national governments to create a standardised pan European Land Register. Ideally this would also incorporate environmental and climatic information to restrict damaging plans being proposed or at least introduce mitigations at an early stage.

5/ Pristine Mediterranean forests are extremely diverse but there are very few left untouched.

However, sympathetic human management and intervention based on local subsistence activities has not caused significant harm but as time has passed these activities have been outcompeted economically to the extent that they have ceased or been superseded by more damaging activities.

Unfortunately abandoned areas have not had time to restore themselves to a pristine state and climate change has made them much more prone to wildfires. Where alternative economic activities have superseded traditional ones then forests have been directly damaged or destroyed. As well as losing the forests as buffers against a changing climate this has led to a significant reduction in biodiversity and species diversity. Loss of these natural resources actually reduces our opportunities to find new solutions like drugs and cures to fight future pandemics. In a rapidly changing world, the ability to harness your own resources to find new answers within your own borders is becoming essential and so the permanent loss of a single species is potentially serious. Harnessing innovation in this way would potentially make forests economically valuable for something other than the timber that they grow. Europe needs to recognise and promote the value of its natural and genetic forest resources and use them to bring in much needed revenue to support them.

Conclusion

Of all the forest areas that this series of workshops has studied the one under the most threat and in need of urgent support is the Mediterranean.

Issues of unsustainable management, drought, pests and diseases together with land abandonment, development pressure and governmental apathy, compounded by climate change, all seem to coalesce here, and the situation is deteriorating. This summer's devastating fires in Evia, Greece are a tragic example. The fires are blamed on arson to facilitate development which shows that even an active forest economy of resin and honey production industry struggles to compete with other uses. Homes and livelihoods have been destroyed and the winter rains have now exacerbated this tragedy with floods and mudslides. It can only be hoped that the Greek Government will make strenuous efforts to protect and restore the forests and the local sustainable economy.

However the picture is not all bad and there are many people who care about the forests and want to see them used sustainably and appreciated for their invaluable contribution to a stable climate. There are innovative projects but there has to be a realisation at all levels that the acquisition of financial benefits that displace or relegate social and particularly environmental ones frequently leads to long term loss of all three. Once a natural environmental system is gone it is difficult to replace.

Unfortunately, local people cannot act in isolation, and it is incumbent on national Governments and the EU Commission to give a strong lead that Europe's forests are precious and need to be properly valued through complementary cross border protection.

ANNEXES

A1/ MEDITERRANEAN FORESTS, WOODLANDS AND SCRUBS

Source: WWF, <https://www.worldwildlife.org/biomes/mediterranean-forests-woodlands-and-scrubs>

The Mediterranean Sea is c.2,400 mi (3,900km) long with a maximum width of c.1,600km; It connects with the Atlantic Ocean through the Strait of Gibraltar; with the Black Sea through the Dardanelles, the Sea of Marmara, and the Bosphorus; and with the Red Sea through the Suez Canal. Its chief divisions are the Tyrrhenian, Adriatic, Ionian, and Aegean seas; its chief islands are Sicily, Sardinia, Corsica, Crete, Cyprus, Malta, Rhodes, the Dodecanese, the Cyclades, the Sporades, the Balearic Islands, and the Ionian Islands.

Although climatically similar such a wide area is not homogenous and is divided into several ecoregions

Western Europe and Northern Africa: parts of Portugal, Spain, France, Italy, and Morocco

Source: WWF, <https://www.worldwildlife.org/ecoregions/pa1221>

Size 27500 sq miles

This ecoregion, located on the southeast coast of the Iberian Peninsula, is characterized by a man-made semi-natural landscape, formed by extensive semi-natural sylvopastoral woodlands known as "montados" in Portugal and as "dehesas" in Spain. Historically, these have represented very efficient and rational multipurpose management systems, adapted to adverse environmental conditions imposed by low quality soils and harsh climate. This ecoregion serves as habitat to some of the most endangered species in Europe such as the Iberian Lynx (*Lynx pardinus*), the Imperial Eagle (*Aquila heliaca*), and the Great Bustard (*Otis tarda*). Change in land use has led to soil degradation; tourism, urbanization, and road building are the most serious threats to this ecoregion.

The Southwest Iberian Mediterranean sclerophyllous and mixed forests Ecoregion extend all along the low elevations, valleys, plains, and Atlantic coastal strip of the southwestern part of the Iberian Peninsula. Land surface is mainly part of three major river basins, the transboundary Spanish-Portuguese basins, the Guadiana basin, the Tajo basin, and the Spanish Guadalquivir basin.

Climatically, the ecoregion experiences very hot and dry summers and relatively mild and humid winters. Annual average temperatures range from 13-19° C, and the minimum average temperature of the coldest month ranges from 1-10° C. The ecoregion is influenced by cold offshore currents, which tend to moderate the temperatures and increase air humidity. Annual rainfall ranges from 450-900 mm.

The ecoregion's forests are mainly composed of evergreen broadleaf canopy species. Cork oak (*Quercus suber*) forest extends from the coast to low and medium altitudes on siliceous substrates in the western half of the Mediterranean region (Portugal, Spain, France, Italy, and northern Morocco). These Iberian cork oak forests are the most extensive of the whole Mediterranean region. Cork oak forests mainly grow at a humid and warm bioclimate type, with annual rainfall ranges of 600-800 mm and with no frost appearance, from the shore to about 1,500 m. Cork oak forests are characterized by a very rich evergreen and subtropical-like mixing of small trees and high shrubs. Tree species include *Laurus nobilis*, *Arbutus unedo*, *Erica arborea*, *Ilex aquifolium*, *Phillyrea latifolia*, *P. Angustifolia*, *Viburnum tinus*, *Cytisus villosus*, and *Myrtus communis*, with a very representative liana-layer of *Lonicera periclymenum hispanica*, *Smilax aspera*, *Rubia peregrina* var. *longifolia*, and *Hedera helix*.

Holm Oak (*Quercus ilex*) and Holly oak (*Quercus coccifera*) forests are common. Holm oak is an euryecious species, which can withstand wide temperature and rainfall variations and any type of substrate. These once covered extensive areas with deep and humid soils, which have since been transformed into agricultural land. Mixed cork oak and Holm Oak sylvopastoral woodlands appear frequently throughout the ecoregion. Holly Oak generally constitutes dense maquis and

small forest stands in a humid and warm climate on any type of substrate. The Holly Oak formations are characterized by a dense evergreen tree and high shrub layer of *Myrtus communis*, *Arbutus unedo*, *Chamaerops humilis*, *Pistacia lentiscus*, *Erica arborea*, and *Phillyrea latifolia*, and also including many liana species.

Wild Olive (*Olea europaea* and *O. maroccana*) and Carob (*Ceratonia siliqua*) woodlands and maquis were once widely spread all along the fertile, deep soils of the warmest dry coastal and inland plains. This has since been intensively transformed into agricultural land. Only few remnants maintain the natural structure of this forest type. Human impact, mainly from grazing, fires, and firewood collection, has transformed the majority of the existing wild olive and carob plant communities into secondary dense shrubs or "maquis" or into agro-forestry landscapes composed of scattered trees on grasslands or crops. Furthermore, Wild Olive and Carob have been widely domesticated in order to produce olive oil or food and fodder, respectively. A large number of high shrubs or small trees characterize these woodlands and maquis. These include the small palm tree *Chamaerops humilis*, *Pistacia lentiscus*, *Phillyrea latifolia*, *P. angustifolia*, and *Myrtus communis*. Associated lianas are *Clematis cirrhosa*, *C. flammula*, *Smilax aspera*, *Tamus communis*, *Rubia peregrina*, and *Bryonia dioica*. Herbaceous species include *Arisarum vulgare*, *Vinca difformis*, *Allium triquetrum*, and *Ballota hispanica* and frequently appear within the dense and shady tree layer. Small shrub species such as *Lavandula dentata*, *Lycium intricatum*, *Calicotome villosa*, *Osyris lanceolata*, *Jasminum fruticans*, and *Rhamnus oleoides* characterize open woodlands and more degraded shrublands.

The endemic shrub, *Securineia tinctoria*, which has a distributional range almost completely restricted to this river basin, together with several shrub and tree species (*Tamarix canariensis*, *T. africana*, *Salix alba*, and *Populus alba*), characterize the typical riparian woods that are well adapted to periodical flooding.

The coastal Stone Pine woodlands (*Pinus pinea*), associated with sand dunes, are very valuable ecosystems from both socio-economic (sustainable management of pine nut collection is an important income-generating activity for rural economies) and conservation point of view (mainly soil stabilization and biodiversity preservation). For example, the largest Portuguese population of *Chamaelo chamaelon* is found in the Monte Gordo Nature Reserve, close to the western margin of the mouth of the Guadiana

It is composed of the Cork Oak forests, thermo-Mediterranean Cork Oak forests, thermo-Mediterranean *Quercus ilex* subsp. *rotifundifolia* forests, along with small areas of coastal vegetation, flood-plain vegetation, and Iberian supra- and meso-Mediterranean *Quercus* forests (Bohn et al. 2000).

Western Europe: Southeastern Spain

Source: WWF, <https://www.worldwildlife.org/ecoregions/pa1219>

Size 1100 sq miles

This ecoregion, located on the southeastern coast of Spain, is characterized by a warm and dry climate with volcanic rock forming portions of the coast. Although there is an almost complete absence of tree species, the endemism rate of the vegetation, at about forty-two percent, is extremely high

The Southeastern Iberian shrubs and woodlands ecoregion covers a very small area, restricted to a narrow strip of land on the southeastern coast of Spain (Almeria and Murcia). Climatically, the ecoregion is characterized by very warm (winter average temperature of about 11-12° Celsius) and extremely dry (between 200 and 250 mm of annual rainfall) conditions. Strong dry winds such as the Saharan "sirocco" occur frequently, intensifying drought.

This ecoregion is distinguished by an almost complete absence of tree species. Some xeric conifer species appear infrequently, such as pine, juniper, and the exceptional relict population of the endemic North African conifer species *Tetraclinis articulata*. *Tamarix* spp., white poplar, and oleander trees are also found in the seasonally dry riverbeds. The ecoregion's vegetation is formed by "open high-shrub communities", which include many North African plant species such as *Ziziphus lotus*, *Withania frutescens*, *Rosmarinum eriocalyx*, *Maytenus senegalensis*, *Cistus libanotis*, *Ephedra fragilis*, *Genista ramossissima*, *Chamaerops humilis*, and *Launaea arborescens*.

Southern Europe: Southern Italy

Source: WWF, <https://www.worldwildlife.org/ecoregions/pa1218>

Size 5100 sq miles

The South Apennines ecoregion covers the forested mountaintops of southern Italy and Sicily. The region supports an outstanding diversity of plants. Sicily, in particular, has many endemic species. Of 2,700 vascular species, over 20% are endemic, and a majority of these are concentrated in the Madonie Mountains of this ecoregion.

The South Apennines mixed forests ecoregion geographically covers a small area that is restricted to the high mountain massifs of the Italian regions of Basilicata, Calabria, and the island of Sicily. Climatically, the ecoregion is characterized by a sharp altitudinal gradient, from the warm and sub-humid lower elevations (average annual temperature of about 14-17° C) to the cold and per-humid higher elevations (over 2,200 mm, average annual temperature of about 9-13° C). Winters are rigorous with abundant snowfall. Frequent dense fogs envelop the mountain summits of southern Calabria and northeastern Sicily.

The wide altitudinal range of this ecoregion results in several forest zones. The lowest elevations are characterized by the predominance of mixed sclerophyllous evergreen oak (*Quercus ilex*, *Q. suber*) and deciduous (*Quercus pubescens*, *Fraxinus ornus*, *Ostrya carpinifolia*) forests. At medium elevations, mixed deciduous forests (*Quercus cerris*, *Q. pubescens*, *Q. frainetto*, *Castanea sativa*, *Ostrya carpinifolia*) predominate.

The high elevations are characterized by an outstanding forest diversity, including a number of endemic and relict species. A sharp north-south gradient of plant communities is found at the highest elevations. *Pinus laricio* dominates on south-facing slopes with a more Mediterranean cold and xeric bioclimate type. *Pinus laricio* also dominates the highest elevations up to the timberline at Mt. Etna, colonizing volcanic rock after eruptions along with the endemic Etna Birch (*Betula aetnensis*). The endemic and vulnerable *Pinus heldreichii leucodermis* only appears in the Pollino Mountains, where it predominates at the highest elevations, often forming mixed pine/beech forest stands. Silver Fir (*Abies alba*) and Beech (*Fagus sylvatica*) predominate on north-facing slopes and foggy, high plains, forming mixed forests where the Larico Pine often becomes an important component. The only relict stands (less than 100 individuals) of the endemic and very threatened Nebrodi Fir (*Abies nebrodensis*) appear in the Madonie Mountains. Only the Etna volcano has high summits above the timber line, characterized by a thorny cushion shrub community of *Astragalus siculus*, *Berberis aetnensis*, and *Juniperus communis alpina*, as well as the Etna Tree-broom (*Genista aetnensis*).

The ecoregion has maintained the majority of its forest cover. Outstanding and extensive old-growth forests have remained until nowadays due to the inaccessibility of these mountain massifs. It is still possible to find very old individuals of Larico Pine, natural monuments of about 600 years old, in the Sila Mountains. Human population remains very low and is mainly concentrated in the coastal areas. Nevertheless, grazing and forestry management have considerably modified the forest structure. Clear-cutting practices have led to even-age stands with very few old trees and a poor plant understorey.

Though deforestation has not been very intensive through the ecoregion, there is a high potential for human impact. Forestry management systems are inadequate and usage is overly intense. A certain amount of socio-political instability affects the ecoregion. The deliberate setting of forest fires is often the response to a lack of acceptance of social and political measures, such as the creation of new protected areas. Mismanagement of pastures and grazing has also considerably increased the risk of forest fire.

This ecoregion is equivalent to the DMEER (2000) unit of the same name and is based on the vegetation coverage of Bohn et al. 2000. The ecoregion includes the sub-Mediterranean subcontinental thermophilous bitter oak forests, montane to altimontane beech and mixed beech forests, and oro-Mediterranean pine forests of southern Italy south of Naples. It also includes the sub-Mediterranean and meso-supra-Mediterranean downy oak forests, montane to altimontane beech and mixed beech forests, and oroxerophytic vegetation of northern Sicily.

Southwestern Europe: Northwestern Spain and Northeastern Portugal

Source: WWF, <https://www.worldwildlife.org/ecoregions/pa1216>

Size 22100 Sq miles

Claiming some of the last pristine forests in densely populated Europe, the northwestern Iberian Mountains have an older relief that peaks at the snow-capped El Moncayo (2,313 m). Important relict conifer forests of pine and juniper are scattered on rocky areas among the dominant oak forests. Many forests in this region were converted to grassland long ago for grazing and agriculture, and remaining forests are mostly secondary. These forests are threatened by fire as well as poorly regulated hunting, which threatens large mammals like the wolf.

The northwestern Iberian Mountains extend from the Mediterranean southern slopes of the Cantabric Mountains to the central Iberian high mountain range. The ecoregion is characterized by low to medium elevations, which occasionally exceed 2,000 m (Teleño, 2,188 m; Peña Trevinca, 2,124 m). These mountains are part of the western Iberian old Hercynian system, which constitutes medium elevations with a smooth relief, scarcely influenced by the Alpine orogeny. From the geological point of view, ancient Paleozoic rock (granite, slate, schist, conglomerates, quartzite, and sandstone) predominates.

Climatically, the ecoregion is characterized by mild Mediterraneo-Atlantic conditions (average annual temperatures between 7-13° C, average rainfall between 500-1,000 mm), with cold winters (average temperature of the coldest month between 0-5° C) and a moderately intense summer drought period.

The Northwestern Iberian forests show some variation in accordance with altitude. Lower elevations and river canyons, such as the central Duero Basin on the border of Spain and Portugal, are characterized by sclerophyllous broadleaf species (*Quercus ilex* ballota, *Olea europaea*, and *Pistacia terebinthus*). The river canyons harbor refugees of a number of relict broadleaf species, for example, *Celtis australis*. Juniper (*Juniperus oxycedrus*) woodlands also occupy certain rocky plateaus. Medium and high elevations are dominated by deciduous oak forests of *Quercus pyrenaica* and *Q. faginea*. Relict pine (*Pinus pinaster*) forest stands occur on rocky and dry slopes, where they compose mixed pine/oak formations.

From a biogeographic point of view, emphasis should be placed on some very valuable relict conifer forests of *Pinus sylvestris* and *Juniperus thurifera*, which are found scattered on rocky sites of the Cantabrian southern slopes. These juniper and pine forest types currently predominate on cold and continental mountain areas of other Mediterranean ecoregions, such as the Iberian Mountain Conifer and Mixed Broadleaf Forests ecoregion.

The ecoregion's forests have been intensively converted to grassland for use by livestock and for agricultural land. The remaining forests are almost entirely transformed into coppice woodlands, due to intense firewood collection during the last centuries. The rural abandonment trend of the last five decades has contributed to the expansion of secondary forests and dense shrublands. Pines (*Pinus pinaster*) were frequently planted during the 60's and 70's.

Types and Severity of Threats

Due to the high density of flammable resinous pine species, these secondary forests are very vulnerable to forest fires, which are generally started by man. Very remote and wild areas are still to be found along the border of Spain and Portugal, due to the low human population that has historically characterized this area (i.e. the Arribes del Duero international river canyons). Nevertheless, overly intense and poorly regulated hunting is threatening many faunal species, especially in Portugal.

Western Europe: Northeastern Spain and Southeastern France

Source: WWF, <https://www.worldwildlife.org/ecoregions/pa1216>

Size 35000sq miles

Thick with stands of wild olive (*Olea europaea*) and carob (*Ceratonia siliqua*), the Mediterranean forests of southern France and Spain have long been considered a lush locale to live in and to visit

The ecoregion encompasses several centres of plant diversity and has a high floral endemism rate. These natural assets, along with the inviting beaches of the Mediterranean Sea and other curiosities like the semi-wild Camargue horse and bull, has given the region an appeal that has meant a long history of human pressure on its ecology. Forest fires, urbanization, agriculture, pollution, and intensive water usage all threaten the biodiversity of this ecoregion.

The North-eastern Spain and Southern France Mediterranean forests encompass Southern France, the coastal part of Valencia and Catalonia regions in North-eastern Spain, and the Balearic Islands.

The ecoregion's forests are mainly composed of mixed evergreen and deciduous broadleaf and conifer species. Mixed evergreen (*Quercus ilex*, *Q. suber*) and deciduous (*Q. pubescens* in Southern France, *Q. faginea* in continental Spain) forests are widely spread all along the continental part of the ecoregion. A North African deciduous oak (*Quercus canariensis*) appears locally in the coastal mountains of northern Catalonia. The Balearic Islands only host holm oak (*Q. ilex*) forests, mainly on Mallorca Island.

Wild olive (*Olea europaea*) and carob (*Ceratonia siliqua*) woodlands and maquis are mainly distributed in the southern portion of the ecoregion (Valencia region and Balearic Islands). Mixed oak/stone pine (*Pinus pinea*) forests frequently appear on siliceous rocky slopes of the coastal ranges, while stone pine and dense maquis vegetation (*Juniperus phoenicea*, *Pistacia lentiscus*, *Myrtus communis*, *Chamaerops humilis*) characterize the coastal sand dunes. Maritime pine (*Pinus pinaster*) predominates on sandstone substrates in certain coastal mountain ranges, and Aleppo pine (*Pinus halepensis*) and holly oak (*Quercus coccifera*) mixed forests characterize the limestone and marl rocky mountain slopes.

Seasonally flooded river beds (known in Spain as "ramblas"), are characterized by shrub and tree species (*Tamarix* spp., *Salix* spp., *Nerium oleander*, *Vitex agnus-castus*, *Populus alba*, *P. nigra*, *Fraxinus angustifolia*), all well-adapted to periodical flooding. The saline wetlands support a halophytic vegetation of *Salicornia herbacea* and *Arthrocnemum fruticosum*, while less saline, better-drained areas give rise to meadows of *Agropyron* spp., *Puccinellia* spp. and *Juncus maritimus*.

Most of the ecoregion has been intensively transformed into agricultural land, including mountain crop terraces and pastures, extensive vineyards, almond and olive groves, fruit trees orchards, and other irrigated crops. Coastal urbanization for tourism development is intensively degrading the last remaining coastal woodlands, as well as provoking an alarming situation regarding water shortage and pollution.

Types and Severity of Threats

Current human impact remains in this ecoregion and is the result of several activities. Urbanization continues bringing house construction, quarry building, and increased water consumption. Agricultural intensification and large irrigation plans are problematic, with extensive greenhouse crops planted in coastal areas. Forest fires are devastating to the ecoregion; 98% are of human origin due to arson or negligence, sometimes as a response to land use conflicts, otherwise due to unregulated new land uses, such as tourism. Dam construction in the bordering ecoregions causes riverbeds to dry up, and channels to deviate the water to dams or from one river to another one are heavily impacting the coastal ecological dynamics. For example, the new Spanish hydrologic plan is putting the Ebro Delta at risk of disappearance, which would bring huge negative consequences to human activities and to biodiversity in this ecoregion. Other threats to the ecosystem are from road building and inadequate and overly intense hunting.

Southeastern Europe: Northern Italy, Slovenia, Croatia, Bosnia & Herzegovina, Montenegro, Albania, and Northern Greece

Source: WWF, <https://www.worldwildlife.org/ecoregions/pa1210>

Size 15700 sq miles

The Illyrian deciduous forests encompass coastal areas on the eastern coast of the Adriatic Sea. The region has a relatively high floral endemism rate with many relict and narrow range species.

Faunal diversity is high, and a number of IBAs (Important Bird Areas) and threatened SPECs (Species of European Concern) are found within the region. Illegal logging, illegal hunting, and uncontrolled plant harvesting have destroyed extensive forest areas that have been relatively intact until recently.

The Illyrian deciduous forests extend all along the coastal ranges of the Eastern Adriatic coast, from the eastern Alps to the northern Ionian coast between Albania and Greece.

The ecoregion is characterized by an average annual rainfall of 1,500-2,000 mm, which can locally exceed 3,000 mm. Of particular interest is the extremely heavy rainfall of the Velebit Mountains in Dalmatia (over 3,000 mm annually). Snow falls frequently during winter and January average temperatures are below freezing (from -10 ° C to 0 ° C). Average temperatures in July are between 15 to 20 ° C.

The wide altitudinal range of this ecoregion results in two major forest zones: a conifer zone, occurring at the highest elevations (average altitudinal range of 1,200-2,500 m), and a mixed broadleaf zone, covering medium elevations and lowlands. The dominant canopy tree species of the mountain conifer forests are spruce (*Picea abies*), silver fir (*Abies alba*), and black pine (*Pinus nigra*). Mixed fir, spruce, and beech (*Fagus sylvatica*) forests frequently appear all along the high elevations and the more continental east-facing slopes.

Broadleaf beech and mixed oak forests dominate at medium and lower altitudes in deep soil and humid elevations, valleys and canyons. A remarkably high diversity of deciduous oak species (*Quercus frainetto*, *Q. pubescens*, *Q. cerris*, *Q. virgiliana*, *Q. dalechampii*) and other deciduous broadleaf species (*Carpinus orientalis*, *Castanea sativa*, *Ostrya carpinifolia*, *Tilia* spp., *Sorbus* spp., *Acer* spp.) characterize the coastal slopes. Evergreen trees, mainly holm oak (*Quercus ilex*) and Aleppo pine (*Pinus halepensis*), and maquis shrubs (*Pistacia terebinthus*, *Rhamnus alaternus*, *Phillyrea latifolia*, *Arbutus unedo*) become predominant at the lower altitudes near the coast.

Current Status

The mountain ranges of this region have had low human populations, and tall forests still prevail widely throughout. A significant number of pristine large forest stands remained quite untouched until very recently. Rapid and intense forest degradation in the form of illegal logging, pollution, and fire took place during the recent Balkan conflicts that led to the division of the Former Yugoslavia into a number of independent republics. Overexploitation of forests is ongoing in certain areas due to the political instability of most countries in the ecoregion.

Types and Severity of Threat

Human impact remains high in this ecoregion, mainly due to the socio-economic and political instability of most countries in the ecoregion, where illegal logging, illegal hunting, and uncontrolled plant harvesting have already destroyed extensive forest areas-- including those within certain protected areas.



**WEBINAR,
25.2.2021,
17:00 - 19:00 CET**

zoom: Meeting ID 850 1975 9111

WHAT IT IS ABOUT

After 3 workshops held in UK, SRB, EE "INSIGHTS & VIEWS FROM THE MEDITERRANEAN" will complete our view on what is meant by Sustainable Forestry .

This webinar will give the floor to actors having practical experience in sustainable forestry and will draw a link to the EU Green Deal and strands for action.

HOW TO REGISTER

please make use of this online-registration form:

<https://forms.gle/cKCweSLruEuGtH4W7>

You will receive a short reminder by email before the meeting.

-- REGISTRATION IS OPEN --

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SUSTAINABLE FORESTRY

INSIGHTS & VIEWS FROM THE MEDITERRANEAN

PROGRAMME

Introduction

Guiding into this webinar. Simone Matouch, Forum Synergies, AT

Forum Synergies' Sustainable Forestry Programme

Goals & activities

- Introduction to the Sustainable Forestry Programme: Findings of 3 previous workshops
- Guiding into the 4 principles. Gwil Wren, EUCan, UK

Insights & views from the Mediterranean

Contributions from practitioners and projects

- Reflorestar, Susana Guimaraes, Portugal
- Fundacion Monte Mediterraneo, Ernestine Lüdeke, Jonathan Bradley, Spain
- Association BIOM, Ivan Budinski, Croatia

Reflections from other actors

- Lydia Petaloudi, Aristotelian University of Thessaloniki, GR
- Jesus, Aromas del encinar, ES

Sustainable Forestry & the climate crisis

Strands for action

- Sustainable Forestry and the EU Green Deal - strands for action, Michael Dower, UK

Open discussion

Inputs for Forum Synergies' Sustainable Forestry Programme

- reflection on the 4 principles
- identify issues and solutions on local/ regional/ national level

Interest in further networking

- how useful is this kind of exchange for you
- should there be any kind of follow up
- what would be of interest for you

OUTLOOK

Concluding workshop April 2021

Findings and conclusions from a 4 years project approach and options for involvement/ contributions

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