

# “Using payment for ecosystem services to promote the conservation of cork oak woodlands”

---

**Miguel Bugalho**

*WWF Mediterranean Program and University of Lisbon  
Science Adviser for Forests and Biodiversity*



*for a living planet*

Hinc patriam sustinet

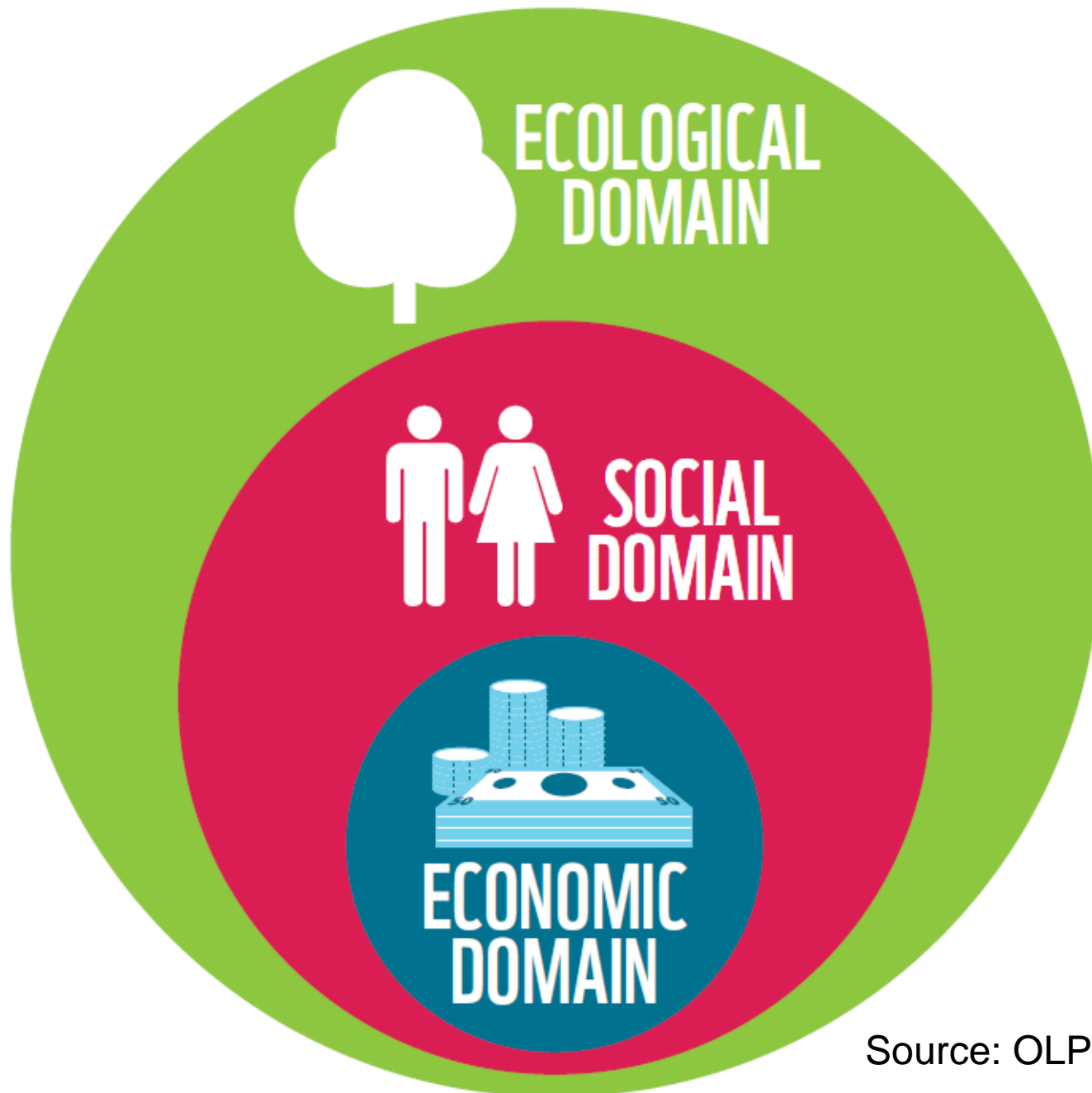
Instituto Superior de Agronomia  
**U LISBOA** | UNIVERSIDADE  
DE LISBOA



## Outline:

- Forests and the conservation of biodiversity and ecosystem services;
- Forest conservation tools: *High Conservation Value Forests, Forest Certification and Payment for Ecosystem Services*;
- Integrating conservation tools: A case study in the cork oak woodlands of Portugal
- Conclusions

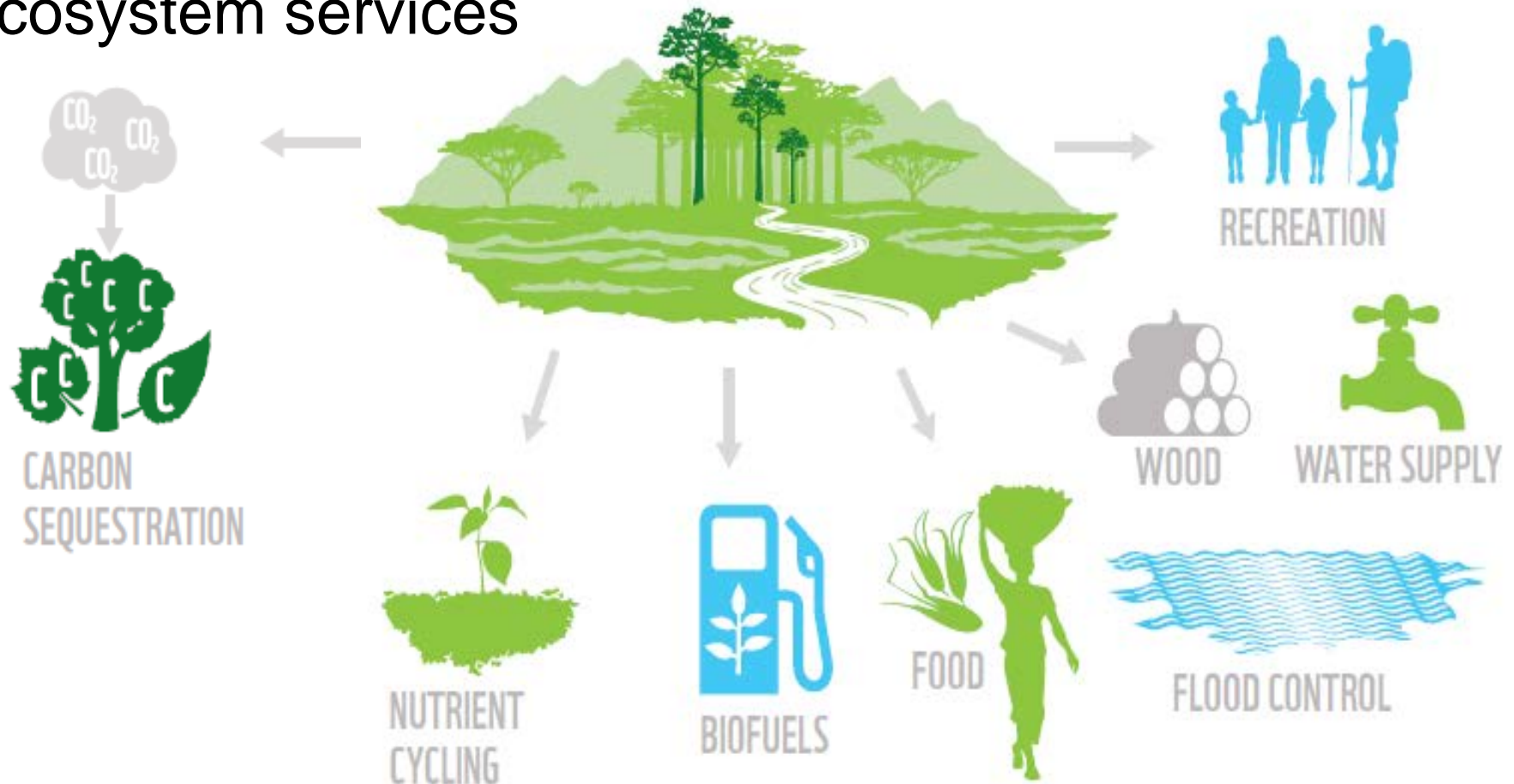
# Ecosystems sustain societies that create economies



Source: OLPR, WWF 2014

# Sustainable Forest Management

Forest ecosystems harbour more than half of all terrestrial vertebrate species and generate essential ecosystem services





*for a living planet*

Hinc patriam sustinet

Instituto Superior de Agronomia

**U LISBOA**

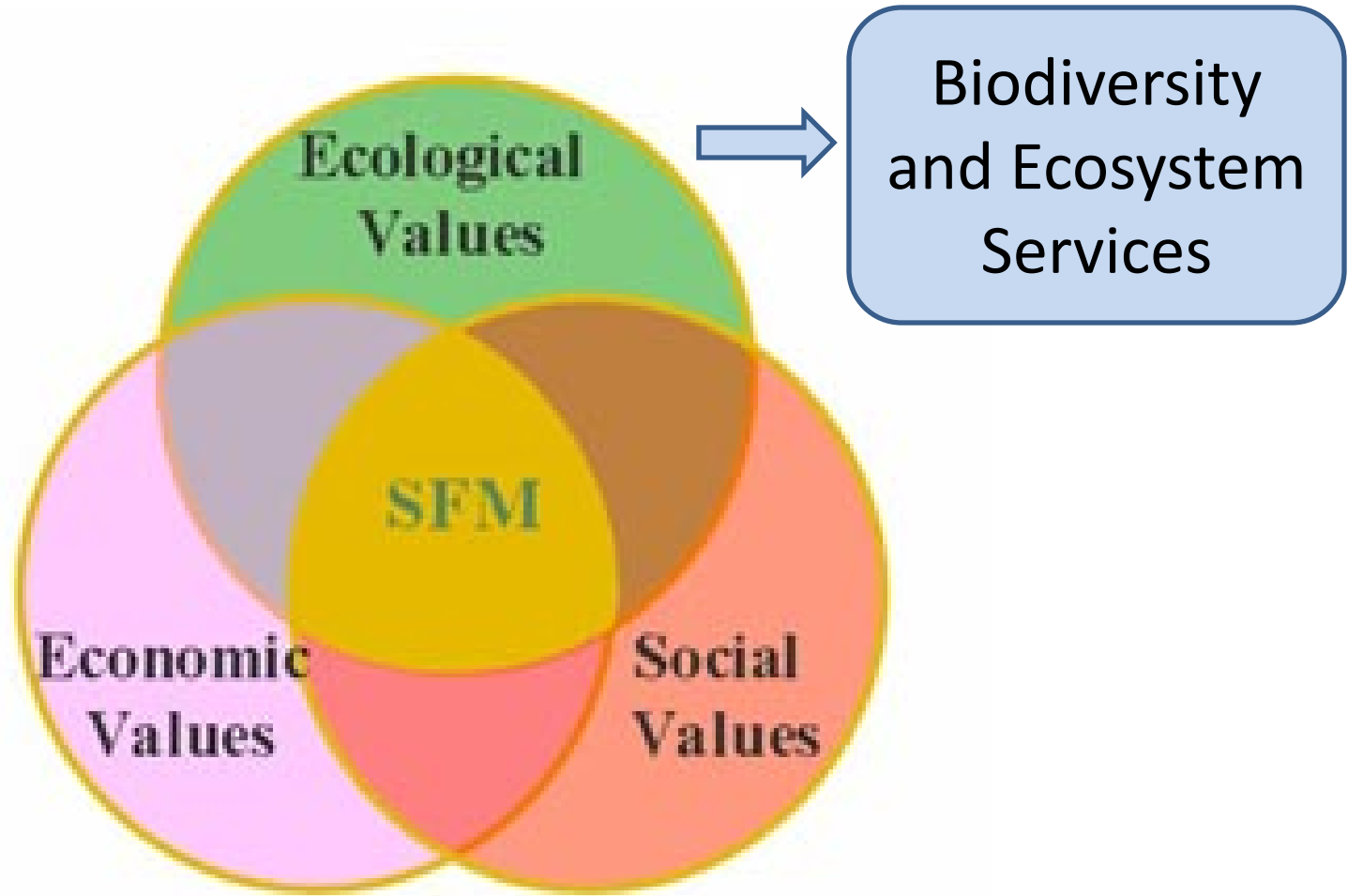
UNIVERSIDADE  
DE LISBOA



# Sustainable Forest Management:

- sustainable use and conservation of forests with the aim of maintaining and *enhancing multiple forest values* through human interventions (FAO 2014).
- stewardship and use of forests (...) in a way (...) that maintains their (...) potential to fulfill (...) *relevant ecological economic and social functions*(...) (<http://www.fao.org/docrep/003/x6896e/x6896e0e.htm>).
- dynamic and evolving concept which aims to maintain and *enhance the economic, social and environmental value* of all types of forests, for the benefit of present and future generations (UN 2008, Resolution 62/98).

# Sustainable Forest Management



# Forest Certification

A proxy of sustainable forest management?

- Program for the Endorsement of Forest Certification (PEFC) : 186 million ha or 4.5% of world forests (PEFC 2014)
- Forest Stewardship Council (FSC): 251 million ha or 6.1% world forests (FSC 2014)



# FSC forest certification

A large, light blue watermark of the FSC logo is centered in the background. It features a stylized tree with a checkmark integrated into its trunk, and the letters 'FSC' below it.

- Aims to promote the sustainable management of forests;
- Forest landowners must comply with environmental and socio-economic management standards;
- Compliance with standards is third party audited.

FOREST STEWARDSHIP COUNCIL  
*Setting the Standard for Responsible Forestry*



# Is forest certification delivering environmental benefits?

- Edwards, Fisher, Wilcove (2012) *Conserv Lett* 5: 20-27: High Conservation Value concept
- Medjibe, Putz, Romero (2013) *Environ Manage* 51: 524-540: Stand structure, species, biomass
- Arbainsyah, Kustiawan, Snoo (2014) *Biodiv Conserv* 23: 2445-2472: Structure, composition, plant diversity
- Silva, Bugalho, Rodríguez-González, Albuquerque, Cerdeira (2014) *J Appl Ecol* 52: 190-198: Mediterranean streams
- Senior, Brown, Villalpando, Hill (2014). *Conserv Lett* High Conservation Value concept (DOI: 10.1111/conl.12148)
- Bugalho, Dias, Brinas, Cerdeira (2015). *Agroforestry Systems*: High Conservation Value concept (doi: 10.1007/s10457-015-9814-x)

# High Conservation Value Forests

## Ecosystem Services Biodiversity



**HCV1 Concentrations of biological diversity** including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.

*E.g. the presence of several globally threatened bird species.*



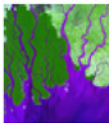
**HCV2 Large landscape-level ecosystems and ecosystem mosaics** that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.

*E.g. a large tract of Mesoamerican flooded grasslands and gallery forests with healthy populations of Hyacinth Macaw, Jaguar, Maned Wolf, and Giant Otter, as well as most smaller species.*



**HCV3 Rare, threatened, or endangered ecosystems, habitats or refugia.**

*E.g. patches of a regionally rare type of freshwater swamp.*



**HCV4. Basic ecosystem services in critical situations**, including protection of water catchments and control of erosion of vulnerable soils and slopes.

*E.g. forest on steep slopes with avalanche risk above a town.*



**HCV5 Sites and resources fundamental for satisfying the basic necessities of local communities or indigenous peoples** (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or indigenous peoples.

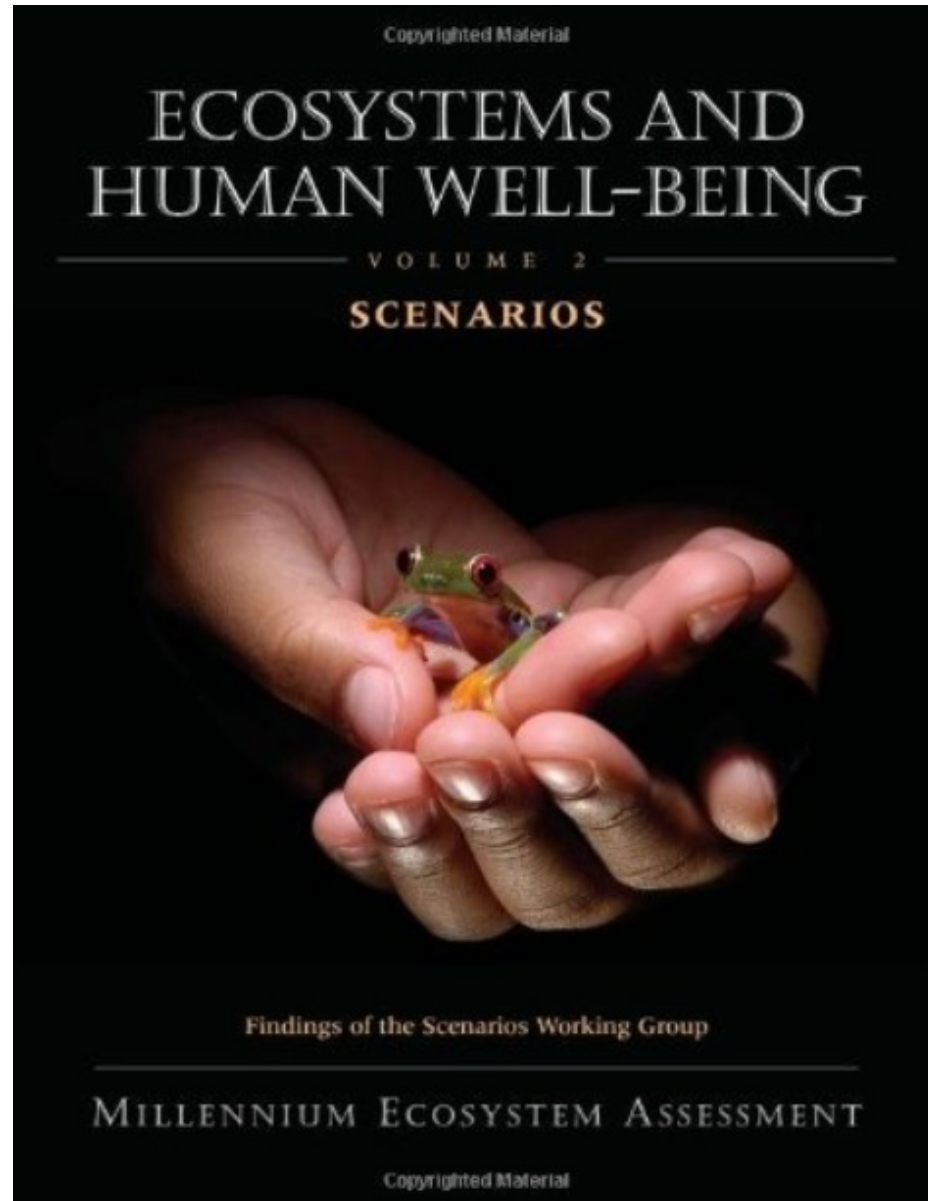
*E.g. key hunting areas for communities living at subsistence level.*



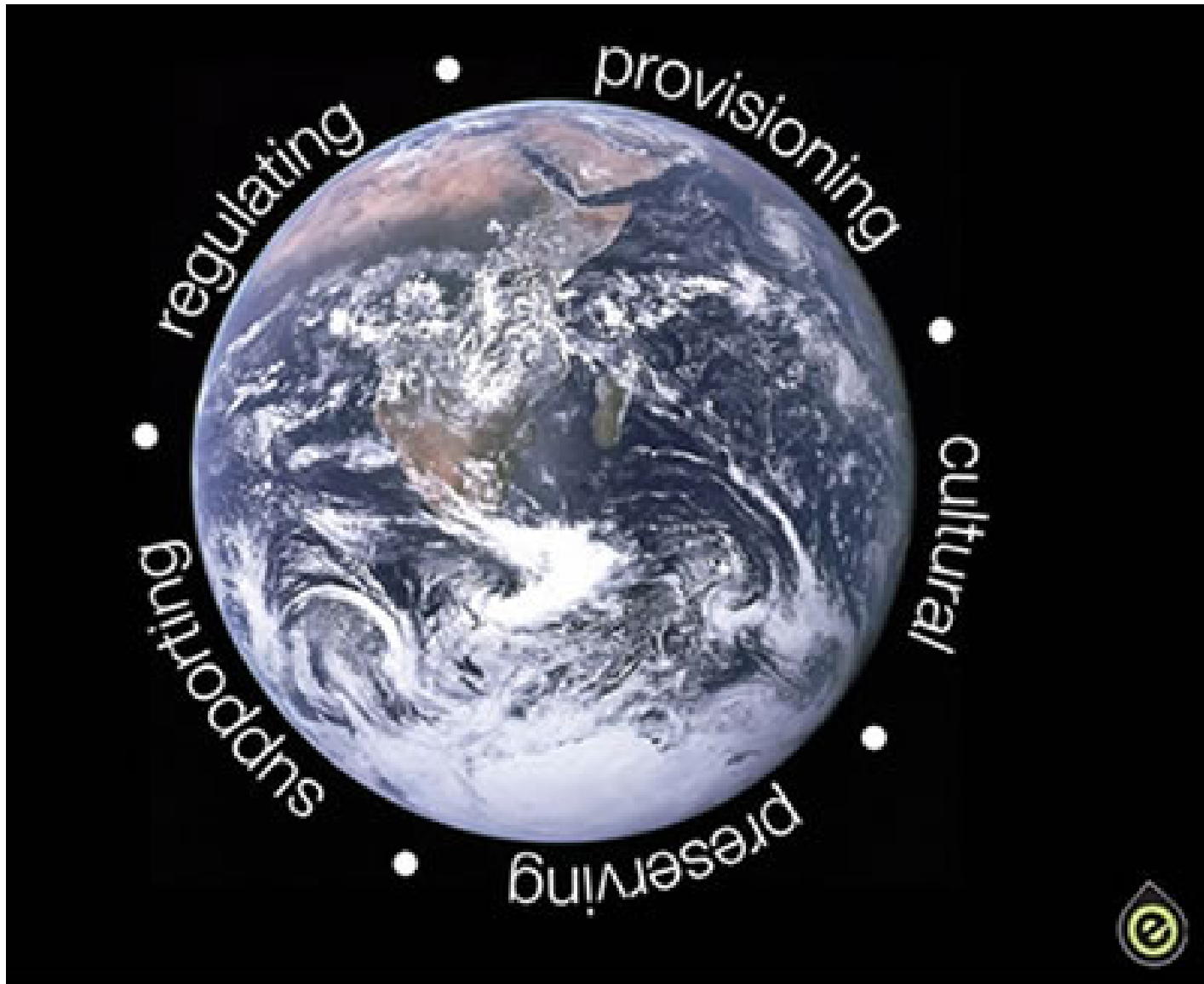
**HCV6 Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples**, identified through engagement with these local communities or indigenous peoples.

*E.g. sacred burial grounds within a forest management area or new agricultural plantation.*

HCVF explicitly integrates *HUMAN NEEDS* into a conservation framework



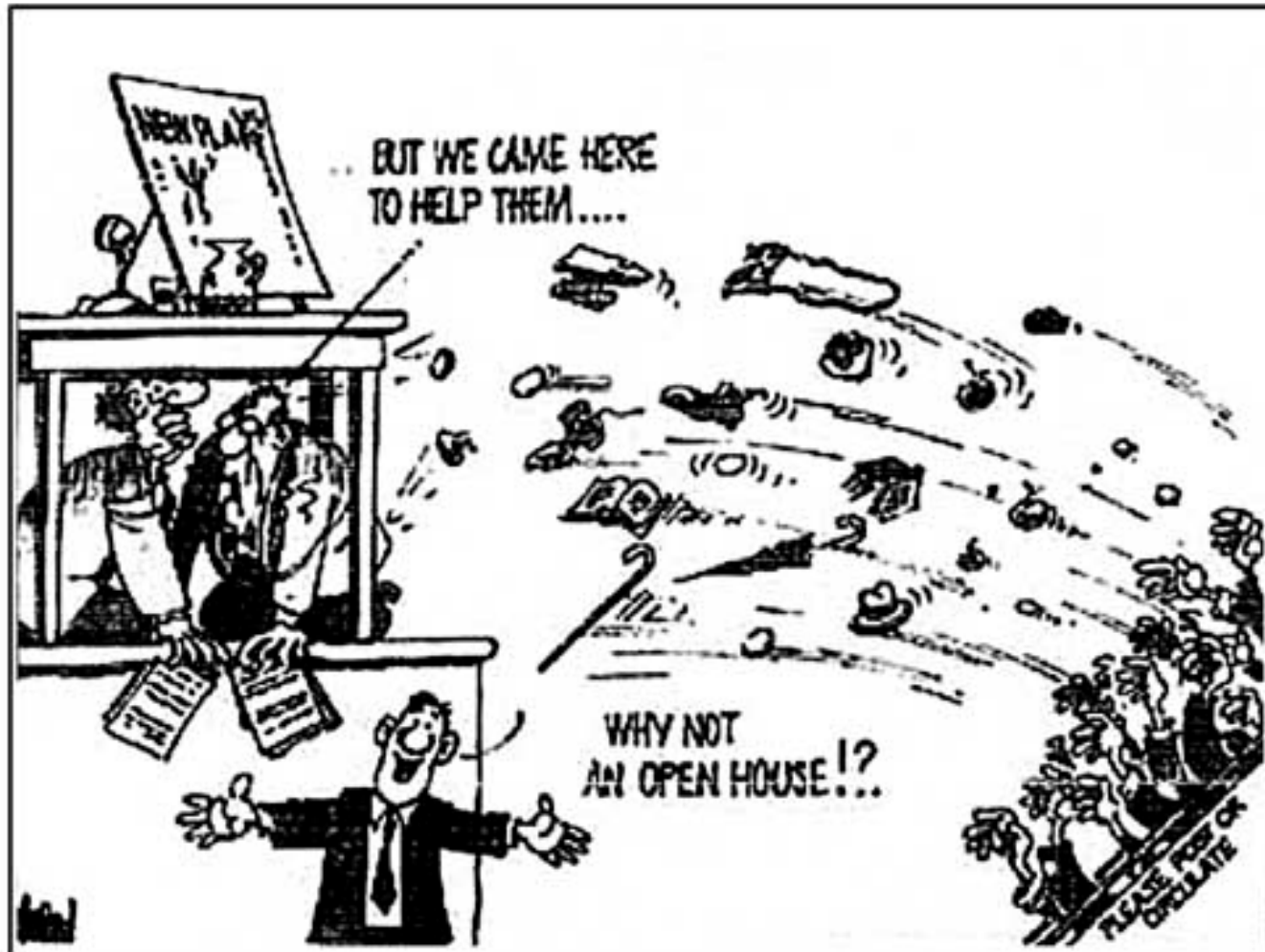
HCVF explicitly addresses *ECOSYSTEM SERVICES* as conservation attributes



HCVF explicitly considers *LAND MANAGEMENT* to maintain or enhance conservation attributes



HCVF formally incorporates *PUBLIC PARTICIPATION PROCESSES* (increased power and legitimacy as a conservation tool)



PUBLIC MEETINGS .....THE LAST OF THE BLOOD SPORTS

THE CORNER COLLECTION (NO 3)

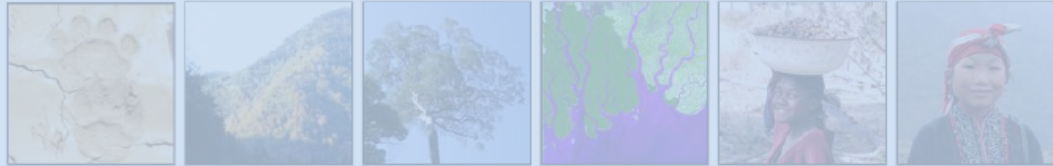
<http://www.oocities.org/>



## The High Conservation Values

# Application of HCVA, at the regional level, to southern Portugal

## HCVA1:



### The six types of High Conservation Value areas

#### 1.1. Protected Areas

#### 1.2. Endangered and critically endangered species

#### 1.3. Endemic species

#### 1.4. Important areas for seasonal use

## HCVA4:

#### 4.1. Areas important for water basin protection

#### 4.2. Areas important for preventing soil erosion

#### 4.3. Areas important for fire prevention

#### 4.4. Areas important for carbon storage

For example, a large tract of Mesoamerican flooded grasslands and gallery forests with healthy populations of Hyacinth Macaw, Jaguar, Maned Wolf, and Giant Otter, as well as most smaller species.

HCV3. Areas that are in or contain rare, threatened or endangered ecosystems.

HCV4. Areas that provide basic ecosystem services in critical situations (e.g. watershed protection, erosion control).

For example, forest on steep slopes with avalanche risk above a town in the European Alps.

HCV5. Areas fundamental to meeting basic needs of local communities (e.g. subsistence, health).

For example, key hunting or foraging areas for communities living at subsistence level in a Cambodian lowland forest mosaic.

HCV6. Areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or spiritual values).

For example, sacred burial grounds within a forest management area in Canada.



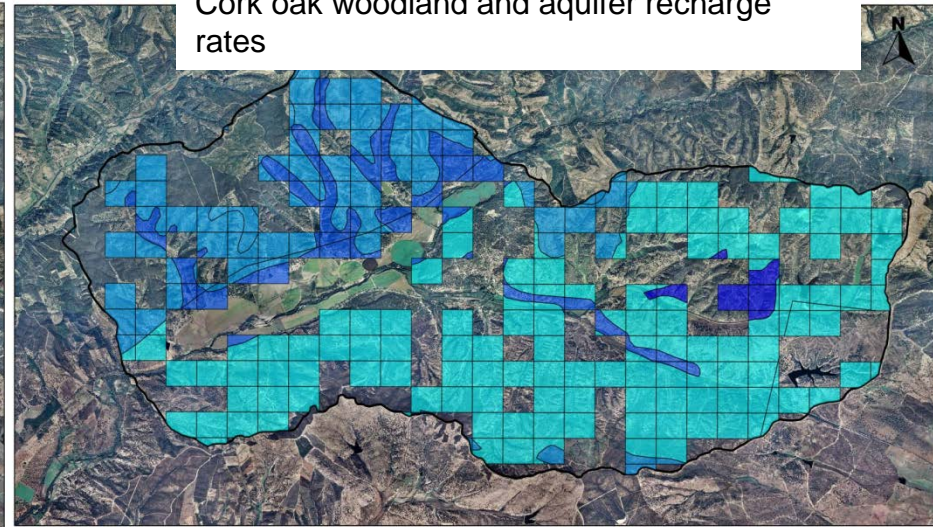
Regional, significant large areas, of cork oak woodlands



**Legenda**  
Montado de sobre extenso

1:37630

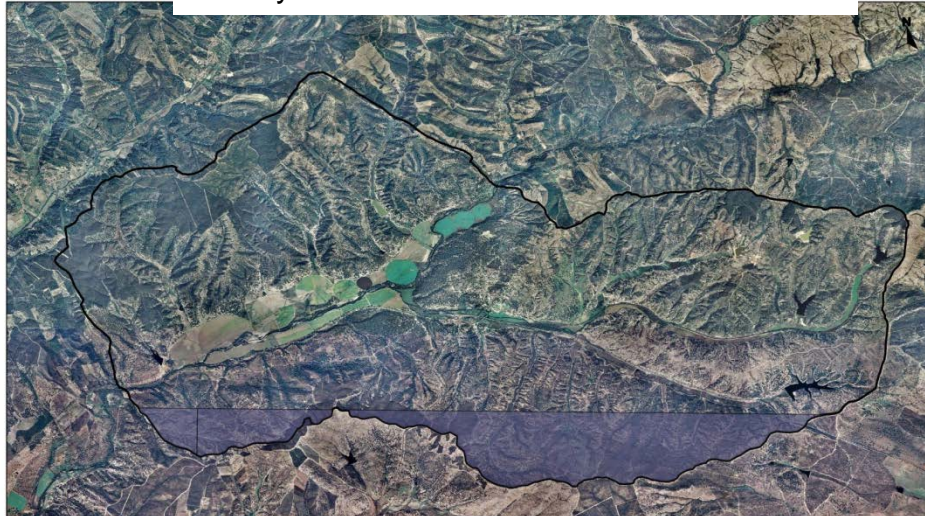
Cork oak woodland and aquifer recharge rates



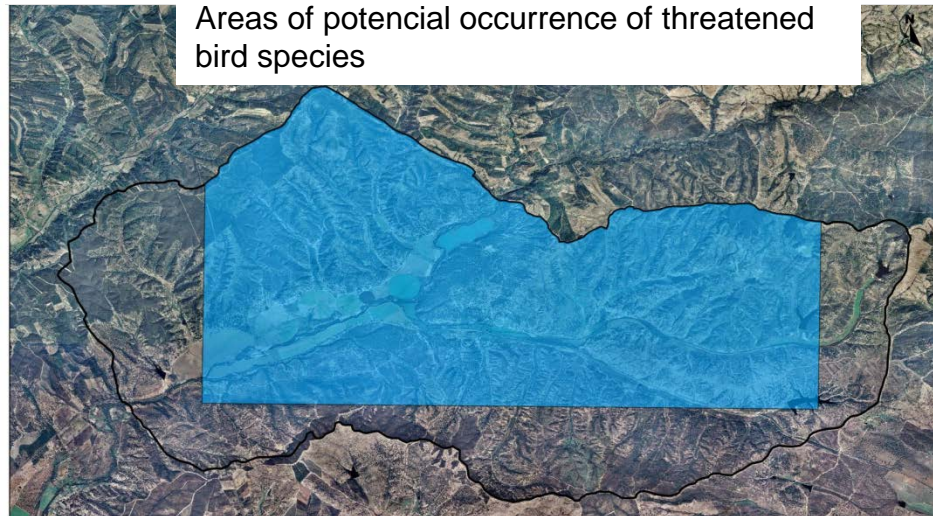
**Legenda**  
Taxa de recarga  
175 < mm/ano < 200  
200 < mm/ano < 300  
300 < mm/ano < 400  
400 < mm/ano < 405

1:37632

Priority habitats



Areas of potential occurrence of threatened bird species



WebGIS tool: HABEaS [www.habeas-med.org](http://www.habeas-med.org)  
(Hotspot Areas for Biodiversity and Ecosystem Services)



# Payment for Ecosystem Services



Service  
Providers

Ecosystem Services

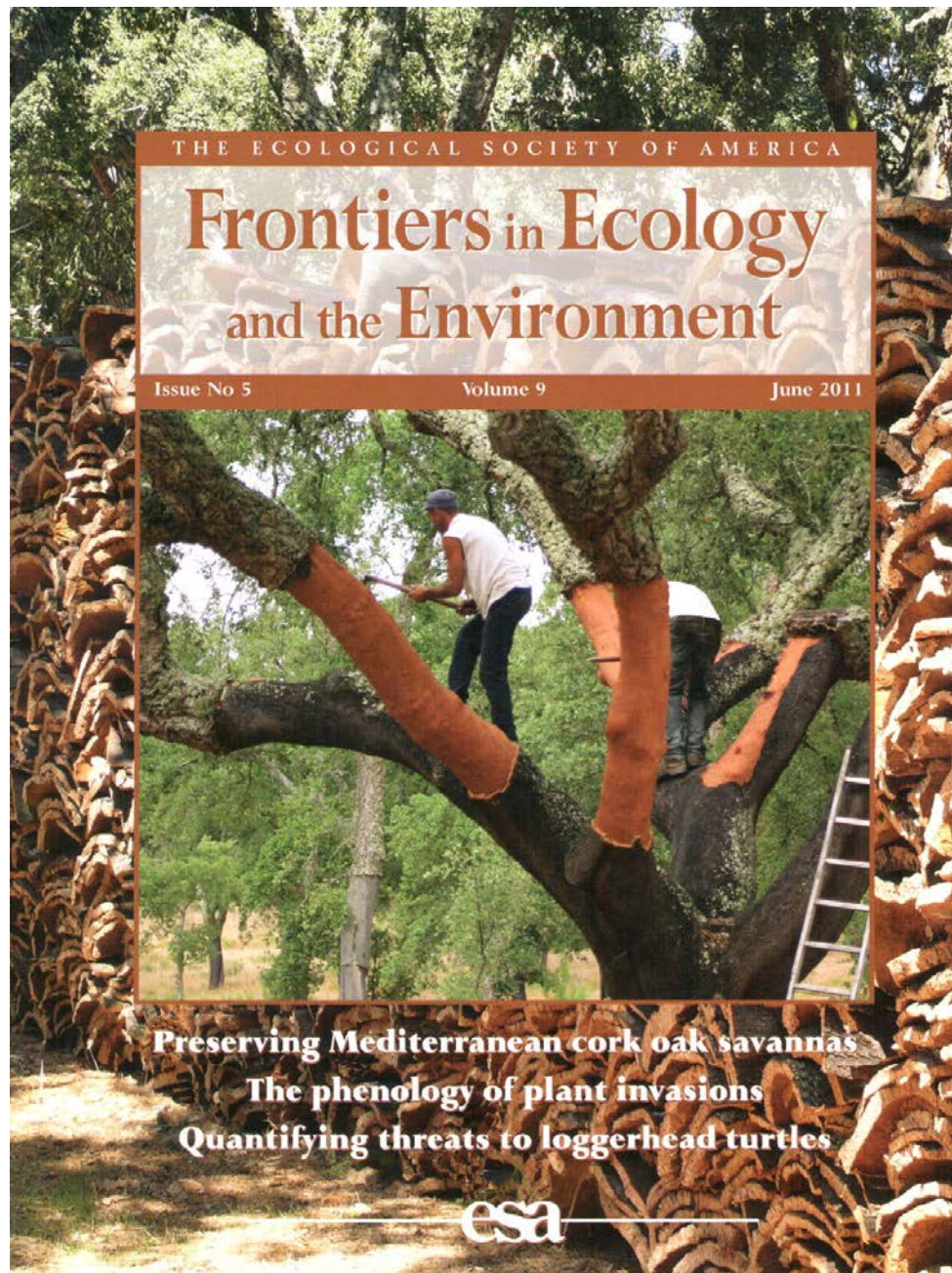
Service  
Users

Payments for Services

# Case study: Cork oak (*Quercus suber*) in Southern Portugal

- Endemic from Western Mediterranean Basin (Portugal, Spain, France, Italy and Algeria, Morocco and Tunisia) covering 2.5 million ha;
- Classified Habitat under pan European network of protected areas Natura2000 and of high conservation value;
- Cork harvesting is main economic activity, but also grazing, cereal crops, hunting;
- 100 thousand ha certified by FSC in Portugal the country with largest cork oak cover (736 thousand ha).





THE ECOLOGICAL SOCIETY OF AMERICA

# Frontiers in Ecology and the Environment

Issue No 5

Volume 9

June 2011

**Preserving Mediterranean cork oak savannas**  
**The phenology of plant invasions**  
**Quantifying threats to loggerhead turtles**

esa

# Payment for Ecosystem Services case in cork oak woodlands



## The Green Heart of Cork project

The Coca-Cola Portugal – APFCertifica PES case

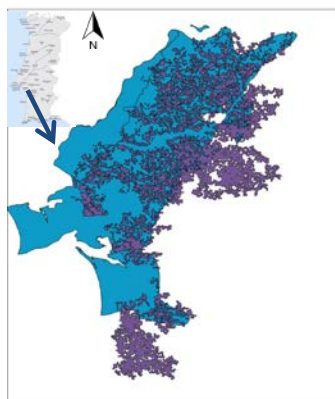
### Type:

Payment for bundle ecosystem services in voluntary market

- **Partner providing the service:** APFCertifica Group Scheme - Forests landowners formed an association and adopted sustainable forest management practices in order to receive Forest Stewardship Council (FSC) certification.
- **Beneficiaries:** Coca-Cola Portugal – Refrige, beverage factory, located over the Tagus Aquifer (T3), consuming 500.000m<sup>3</sup>/year of groundwater.

**Services:** Forest landowners committed to maintain good forest management practices within the 16.000 ha FSC certified areas. FSC certification places a strong focus in criteria related to biodiversity conservation and watershed protection. Approximately 600 hectares (ha) were considered to be of critical importance for biodiversity and water recharge of the aquifer T3 and therefore were considered High Conservation Value Areas.

HCV	High Conservation Value Areas (HCVA) identified by APFC (ha)
Seasonal Concentrations of Species	24,79
Watershed Protection	569,63



**Location:** Portugal, Alentejo and Ribatejo regions



# Payment for Ecosystem Services in cork oak woodlands: Coca-Cola and APFC landowner association



Targeted	Paid for	Who buys?	Who else benefits?	Who sells?	Mechanism
Biodiversity + Water	Responsible management practices	Coca-Cola Portugal	Regional and local community	Association of certified landholders	Voluntary market





*for a living planet*

Hinc patriam sustinet

Instituto Superior de Agronomia

**U LISBOA**

UNIVERSIDADE  
DE LISBOA



# Take home message

Integrating HCVF, PES and Forest Certification:

- Generates a framework allowing clear identification of target areas for PES implementation;
- Ensures rewarding of those forest landholders effectively complying with sustainable management practices;
- Can be used elsewhere for similar conservation initiatives.

## Thank you!