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# Promoting sustainable management of cork oak woodlands

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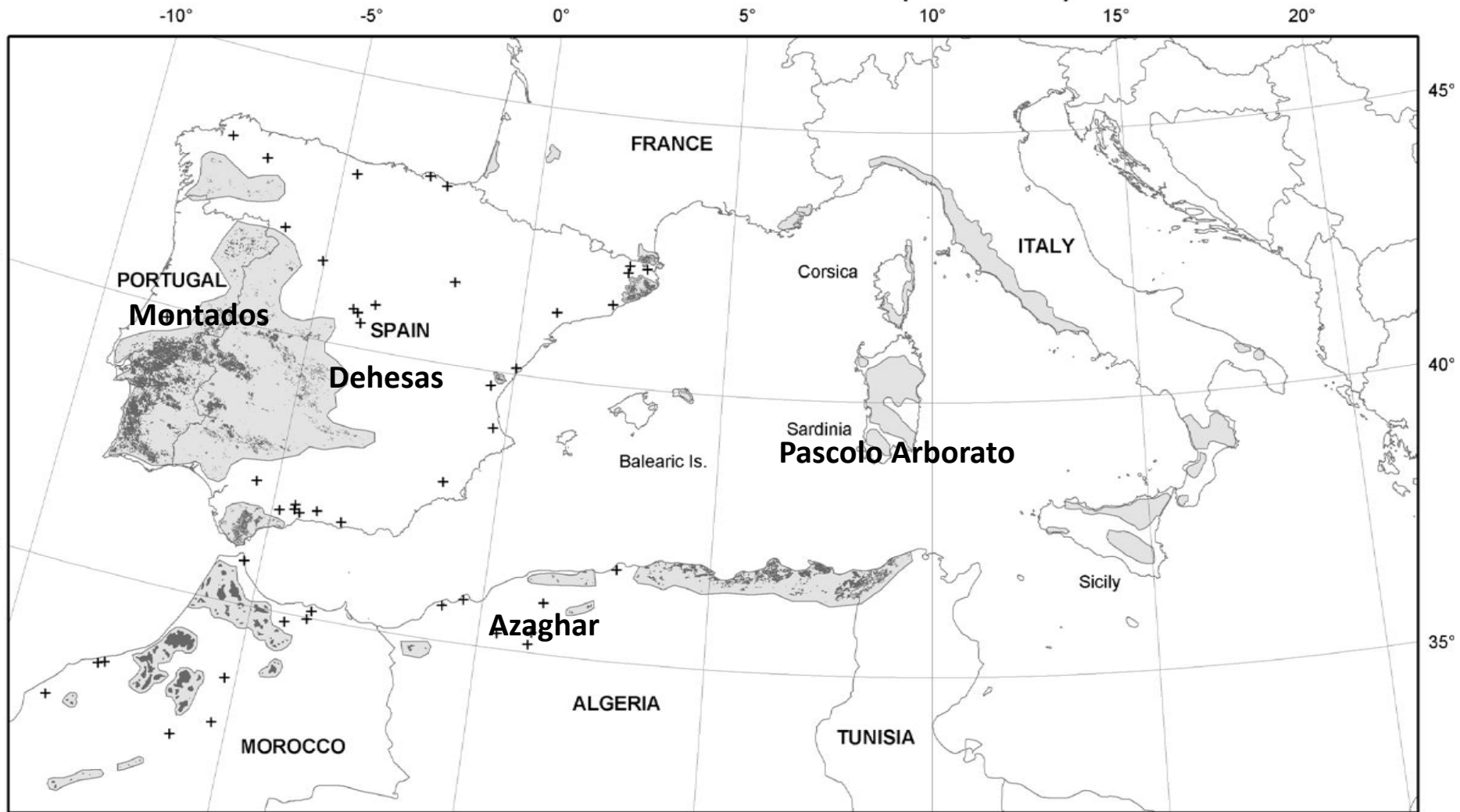
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## Outline of presentation:

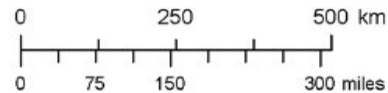
- Cork oak woodlands: conservation value and main threats;
- Sustainable management practices in cork oak woodlands;
- The GHoC Project: Promoting sustainable management using forest certification and payment for ecosystem services;
- Future directions and conclusions.

# Mediterranean cork oak woodlands: Different names same origins and functions

## Distribution of *Quercus suber* (Cork oak)



- Field data from inventories
- Distribution area
- + Isolated populations





Natura2000 classified habitat:

- 9330 *Quercus suber* forests
- 9340 *Quercus suber* and *Quercus rotundifolia* forests

# Conservation value of cork oak woodlands: Biodiversity





**Figure 4.** (a) Cork is extracted manually every 9–12 years. (b) After abandonment, the system undergoes shrub encroachment; this fenced plot has been unmanaged for 12 years, and a dense canopy of *Cistus ladanifer* (averaging 2.5 m in height) has formed. (c) Cork oak savanna 1 year after a severe wildfire; the unburned patch was regularly cleared of shrubs by the landholder. (d) A Moroccan site displays evidence of overuse – including oak mortality, a scarcity of juvenile trees, and overgrazing. The women shown are harvesting acorns.

Adapted from Bugalho , Caldeira et al. (2011). *Front. Ecol. Environ.*

# Sustainable forest management in cork oak woodlands

Oak regeneration? Uneven cohorts of trees?



# Sustainable forest management in cork oak woodlands

## Conservation of water streamline vegetation





# Sustainable forest management in cork oak woodlands

## Grazing management



# Sustainable forest management in cork oak woodlands

## Shrub rotational clearing and management





FOREST STEWARDSHIP COUNCIL  
*Setting the Standard for Responsible Forestry*



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# HIGH CONSERVATION VALUE FORESTS:

The concept  
in theory  
and practice

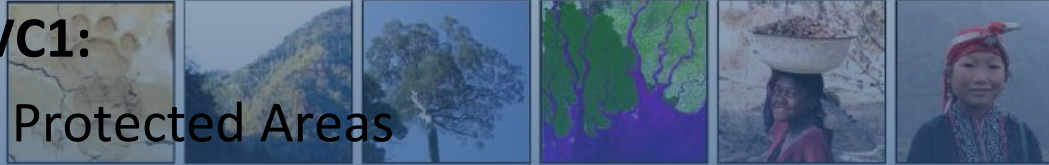


## The High Conservation Values

The core of the HCV approach is the identification and maintenance of High Conservation Values (HCVs). These HCVs encompass the whole scale from species to landscape, and include exceptional or critical ecological attributes, ecosystem services and social functions.

### AAVC1:

#### 1.1. Protected Areas



#### 1.2. Endangered and critically endangered species

#### 1.3. Endemic species

#### 1.4. Important areas for seasonal use

### AAVC4:

#### 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\*



**HCV6. Areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).**

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

# The WebGis tool: HABEaS: Hotspot Areas for Biodiversity and Ecosystem Services (www.habeas-med.org)

The screenshot displays the HABEaS webGIS interface. At the top, the title "HABEaS - Hotspot Areas for Biodiversity and Ecosystem Services" is shown against a background of nature images. Below the title is a navigation bar with "Layers" and "Legend" tabs, a search bar, and utility icons for Link, Print, Save Map, Help, Credits and Contacts, and About... The main map area shows a satellite view of the Iberian Peninsula with semi-transparent green overlays representing "Classified Areas" and brown overlays for "True Marble (Unearthed Outdoors)". A scale bar indicates "Scale 1: 1919940". A blue arrow points from the main map to a detailed inset map of an urban area, which shows a grid of small colored squares (green, purple, blue) overlaid on a satellite image. The inset map includes logos for HABEaS, WWF, and Faunalia.pt. A small inset map in the bottom left corner shows the location of the main map area within the Iberian Peninsula. The bottom of the interface features a scale bar from 0 to 80 km and logos for Med, Quali Gouv, Business Biodiversity, and WWF/Faunalia.pt.

X: -469 Y: -87189

# Responsible management: Payment for ecosystem services?



**Table 2. PES mechanisms to compensate landholders for services that they can provide but are not still compensated for in cork oak savannas**

| <i>Targeted</i> | <i>Paid for</i>  | <i>Who buys?</i>   | <i>Who else benefits?</i>            | <i>Who sells?</i> | <i>Mechanism</i>                                      |
|-----------------|--|--|--------------------------------------|-------------------|---|
| Carbon          | Best management practices;<br>oak savanna restoration;<br>oak regeneration | Government;<br>corporate sector  | Global community;<br>local community | Landholder        | REDD+; FSC;<br>voluntary market;<br>compliance market |
| Biodiversity    | Best management practices  | Government;<br>corporate sector;<br>conservation NGOs                  | Global community;<br>local community | Landholder        | REDD+; FSC;<br>voluntary market                       |
| Water           | Best management practices  | Government;<br>municipalities;<br>water companies;<br>downstream users | Local farmers;<br>local community    | Landholder        | Voluntary market                                      |

**Notes:** Carbon storage, biodiversity conservation, and potential water regulation services can be targeted through payment of best management practices. These services can be bought through public (eg government) or private (eg corporations) funds benefitting the global or local communities. In North African countries, local communities, which do not hold the land but exploit the resources, must be rewarded for sustainable management practices that simultaneously enhance their livelihoods. Adapted from Wunder *et al.* (2008).

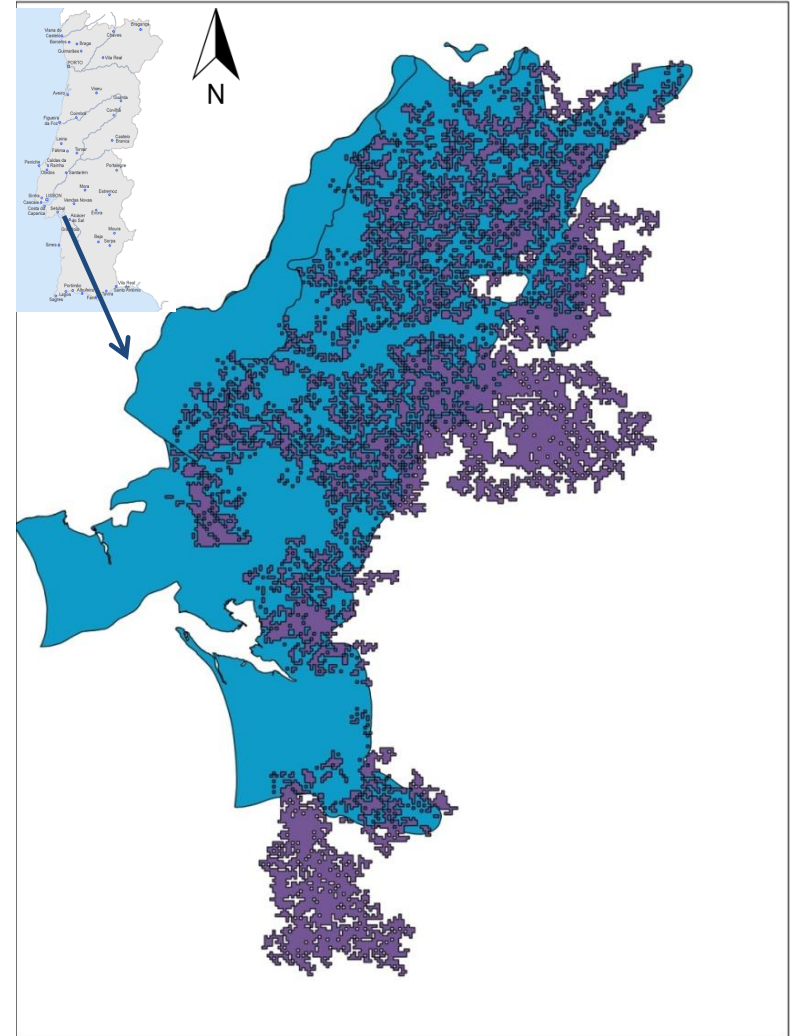
In: Bugalho, Caldeira *et al.* Front. Ecol. Environm. (2011)



Adapted from Wunder 2005

# A case of Payment for Ecosystem Services in cork oak

- Aquifer of left margin of River Tagus;
- Dominant forest cover of cork oak (~40%);
- Nine endemic species of amphibians;
- Nine critically endangered bird species.





## 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.



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

**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   |





# A case of Payment for Ecosystem Services in cork oak



Payment for Ecosystem Services: Coca-Cola and APFC

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



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## **Green-Heart of Cork Project:**

- Integrates forest certification, high conservation value and payment for ecosystem services conservation tools;
- Aims to reward those landowners committing with forest certification and good management practices;
- Presently targeting areas important for the conservation of water and biodiversity;
- Other payments in the future (e.g. carbon and biodiversity)?



**Thanks for your attention!**