Promoting the conservation of biodiversity and ecosystem services in cork oak landscapes

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Outline:

- Sustainable Forest Management and its proxy: Forest Certification;

- How to generate incentives to forest certification?

- Integration of conservation tools: linking HCVF and PES, as a means to incentivize forest certification;

- Case study: cork oak woodlands of southern Portugal.

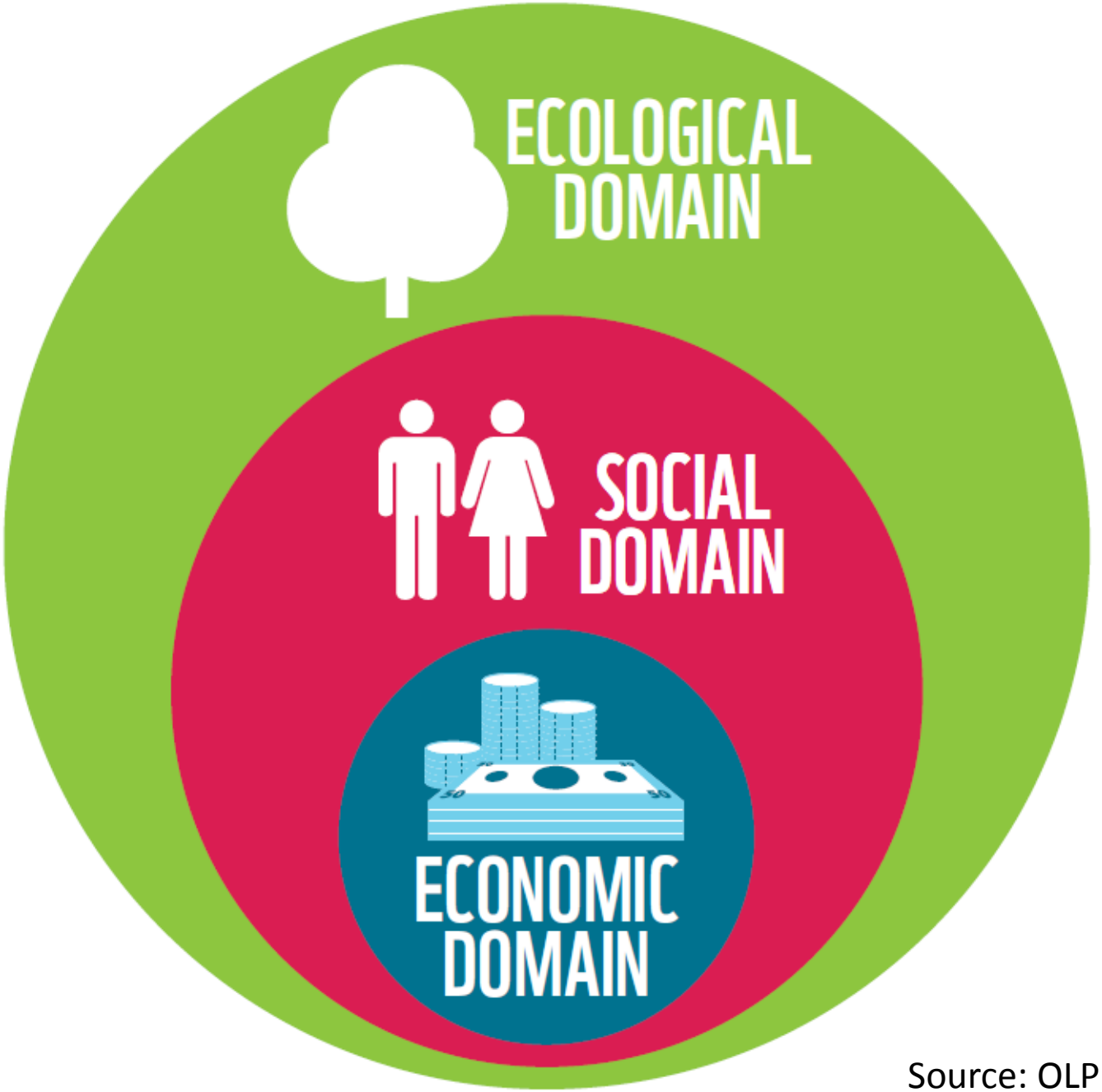
Sustainable Forest Management:

•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).

Ecosystems sustain societies that create economies



Source: OLPR, WWF 2014

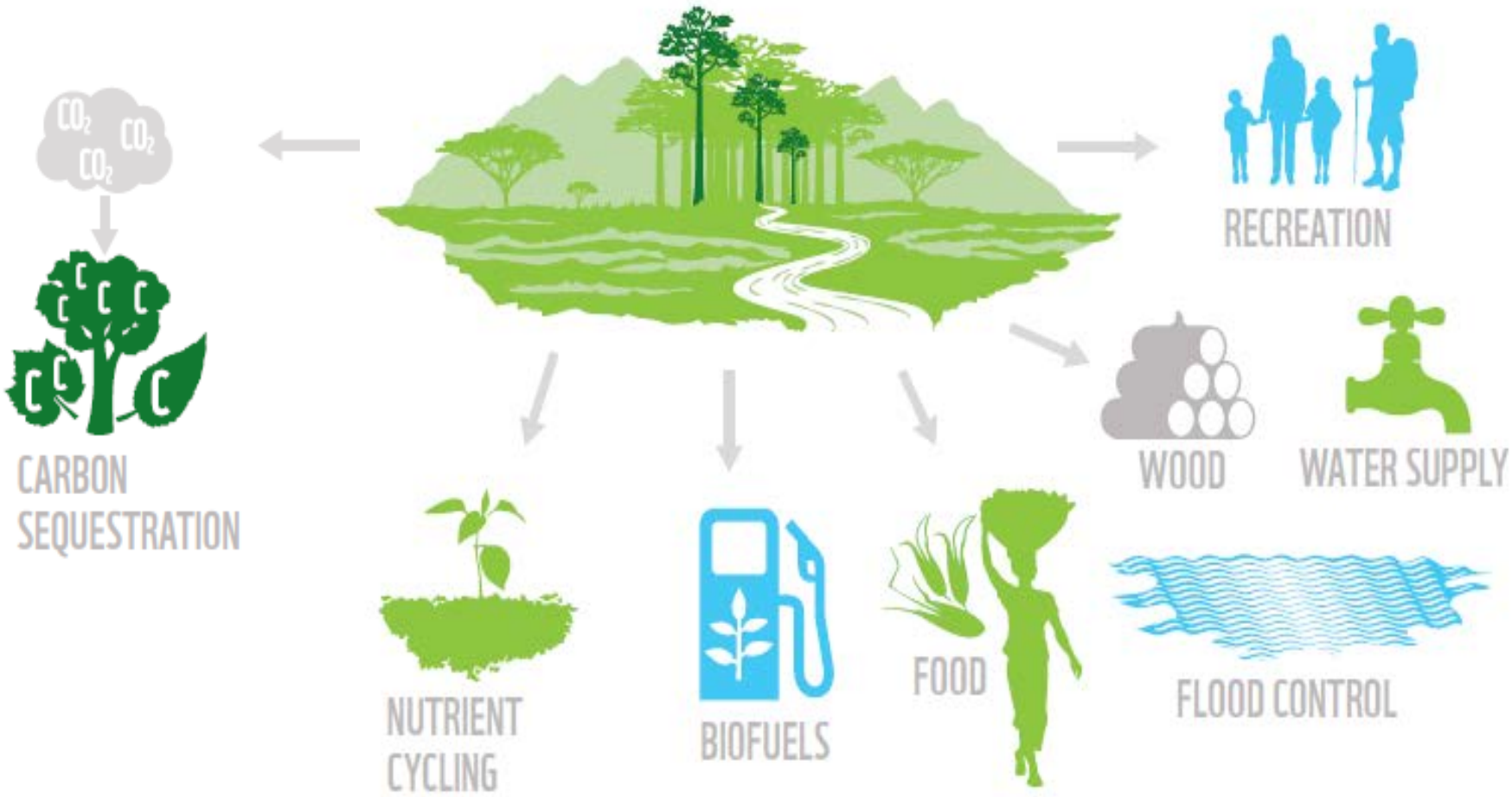
Sustainable Forest Management

Biodiversity and Ecosystem Services

Adapted from: http://www.for.gov.bc.ca/

Sustainable Forest Management

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



OLPR, WWF 2014

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)

Forest Certification: a Proxy of sustainable forest management?

Metrics of certification standards applied to biodiversity (Guynn et al. 2004)

Stand-level, outcome-oriented metrics	Landscape-level, outcome-oriented metrics
Age, size, and species diversity of trees	Ecological function, cycles, and productivity
Dead wood	Ecological reserves or high conservation value forests
Excessive herbivory by deer	Examples of existing ecosystems
Disturbance by biotic and abiotic agents	Exotic species
Herbicide, pesticide, and/or biological control	Fire, prescribed burning
Mixed species stands	Fragmentation

•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

•Dias, Bugalho, Rodríguez-González, Albuquerque, Cerdeira (2014) *J Appl Ecol* : Mediterranean streams (http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12358/abstract)

•Edwards, Fisher, Wilcove (2012) *Conserv Lett* 5: 20-27: High Conservation Value concept

•Bugalho , Dias, Brinas, Cerdeira (in press). *Agroforestry Systems*: High Conservation Value concept

Integration of tools for incentivizing conservation of biodiversity and ecosystem services:

- Forest Certification;
- High Conservation Value Forests (HCVF);
- Payment for Ecosystem Services (PES).

High Conservation Value Forests

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.

Ecosystem Services

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.

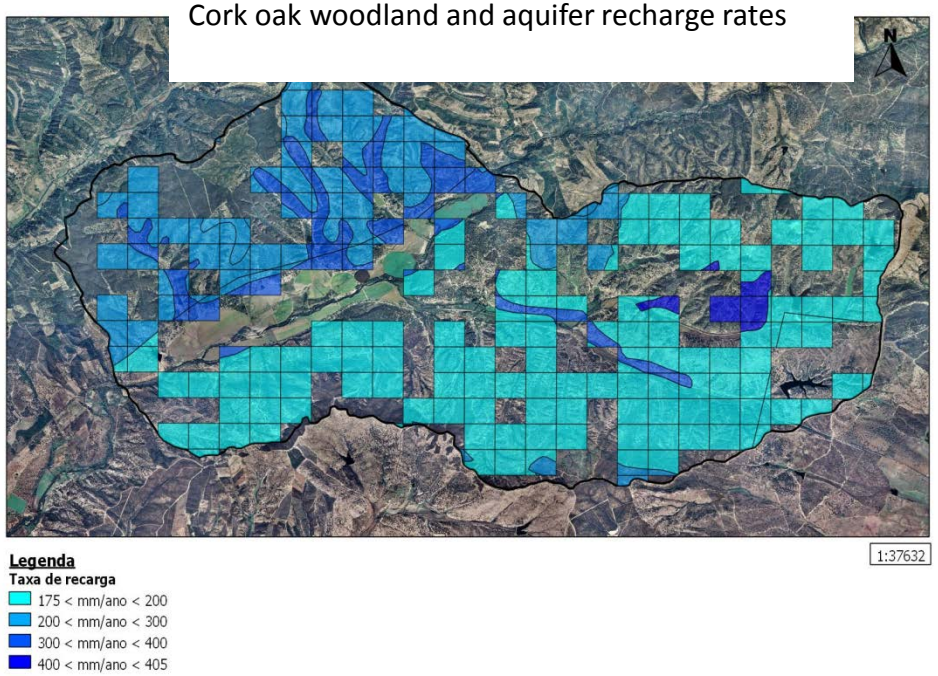
HCV6 Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement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

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

Source: www.hcvnetwork.org

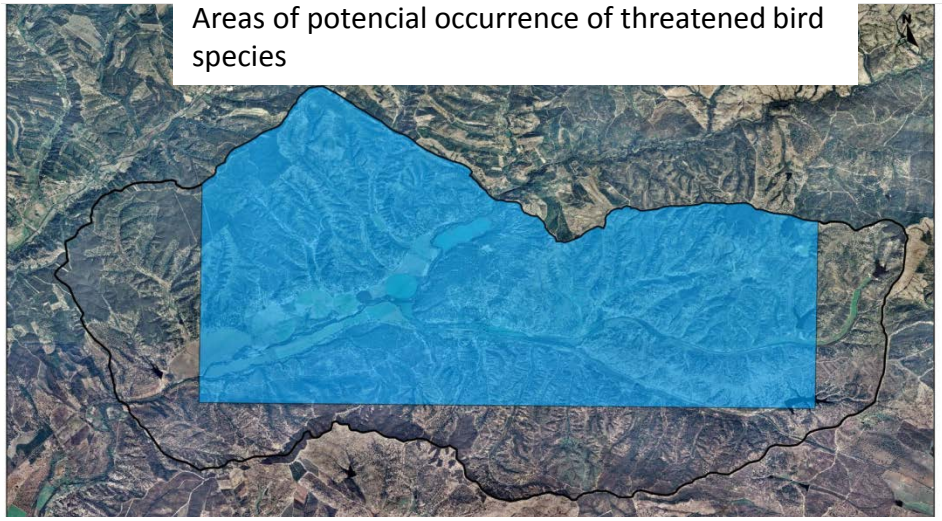
Regional, significant large areas, of cork oak woodlands

Cork oak woodland and aquifer recharge rates



Priority habitats

Areas of potencial occurrence of threatened bird species



WebGIS tool: HABEaS www.habeas-med.org

(Hotspot Areas for Biodiversity and Ecosystem Services)

Payment for Ecosystem Services

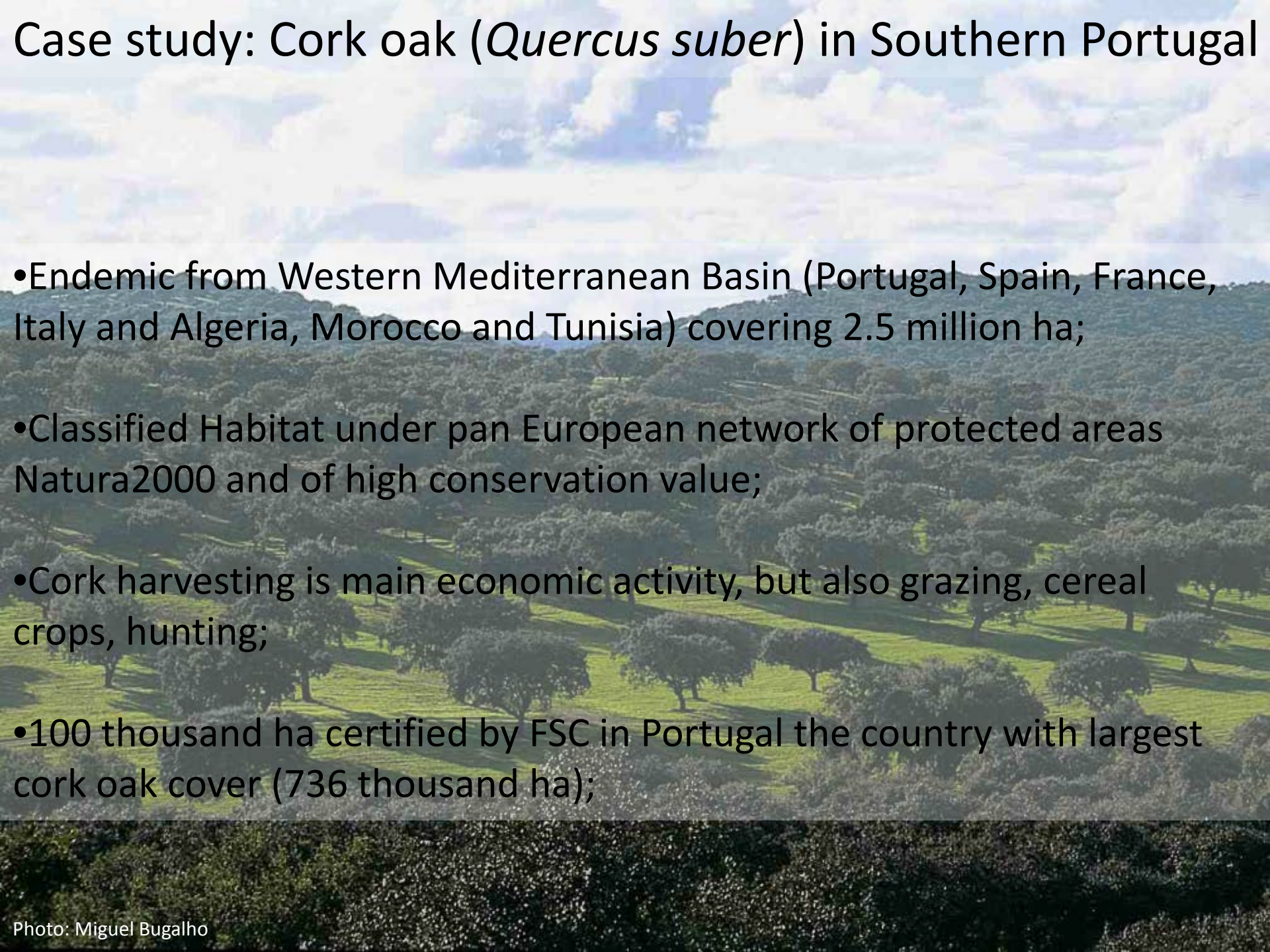
Service Providers

Ecosystem Services

Service Users

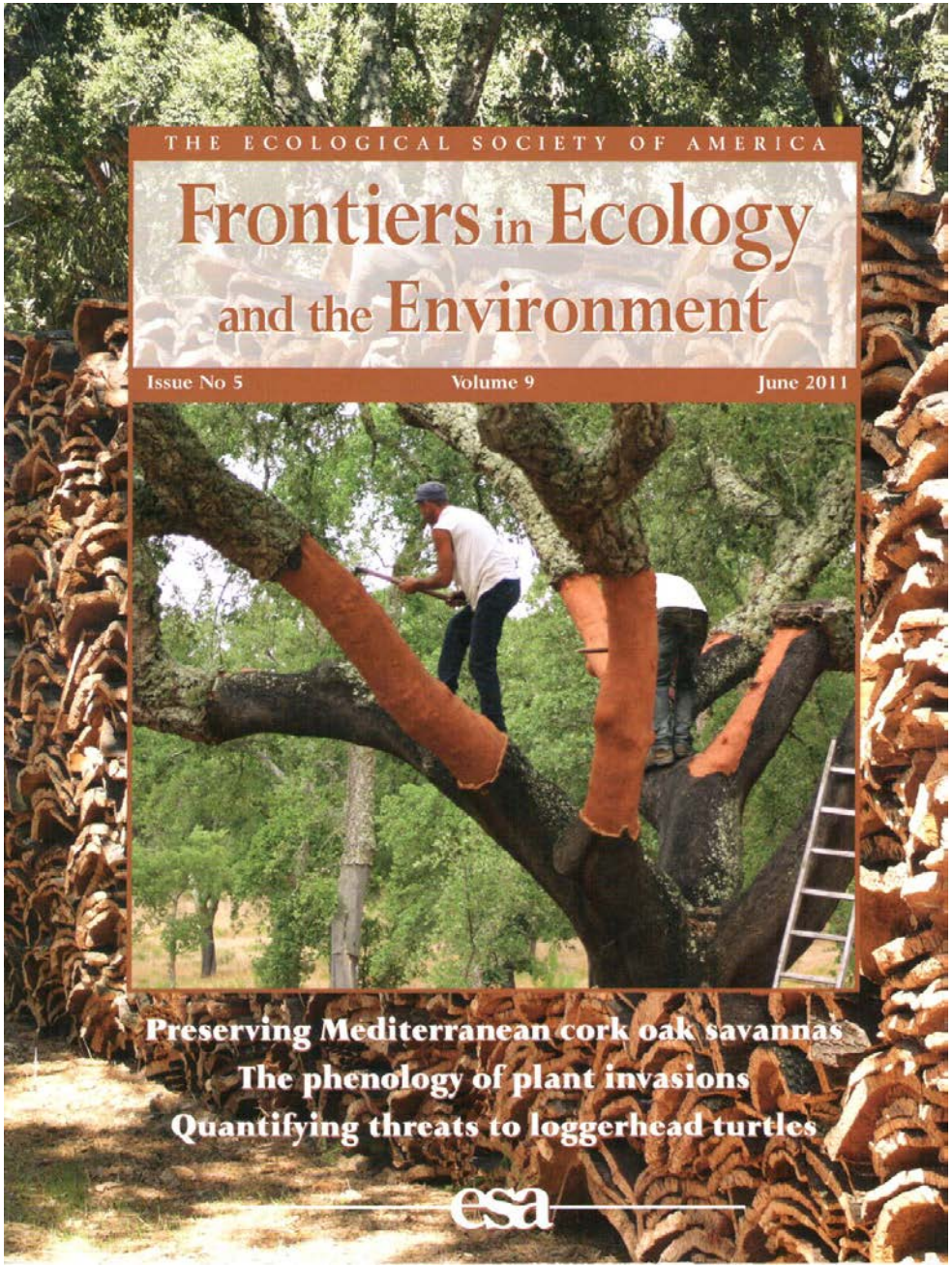
Payments for Services

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);

Photo: Miguel Bugalho



Bugalho et al. 2011 Front Ecol Environ

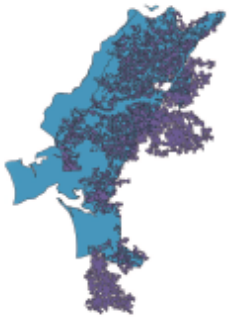
A Payment for Ecosystem Services case in cork oak landscapes

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 500.000m3/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

Payment for Ecosystem Services in cork oak landscapes: 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

Bugalho and Silva 2014 Unasylva

Take home message

Integrating HCVF, PES and Forest Certification:

- Generates a framework allowing clear identification of target areas for company investments in forest conservation;

- Ensures rewarding of those forest landholders effectively complying with sustainable management practices;

- Can be used elsewhere for similar conservation initiatives.

Thank you!