Creating conservation portfolios: identifying areas optimizing biodiversity and ecosystem services in cork oak landscapes

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Rationale

• Sustainable Management (SM) of ecosystems (including silvopastoral) is crucial for the conservation of biodiversity;

• Payment for Ecosystem Services (PES) may be used as a tool to incentivize SM in biodiversity x ES win-win locations.
But... (some technical issues, among others...)

• Systematic, standardized, inventory of biodiversity and ES attributes needed;

• PES mechanisms assuring compliance with SM practices implemented;

• Matching ES providers with ES payers (donors) required;

• Dealing with multiple combinations of biodiversity and bundled ESs.

Systematic inventory of Biodiversity and ES attributes: The High Conservation Value framework (or others...)

Brown et al 2013

www.hcvnetwork.org
Pareto optimization: State of allocation of resources in which it is impossible to make any one individual better off without making at least one individual worse off.

Vilfredo Pareto (1848-1923)
**Pareto optimization**: *State of allocation of resources in which it is impossible to make any one individual better off without making at least one individual worse off.*

![Graph showing Pareto optimization](image)

Vilfredo Pareto (1848-1923)

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**Cork oak woodland distribution, southern Portugal**

![Map of cork oak woodland distribution](image)

Bugalho, Dias et al 2016 Agroforest Syst
Ecosystem services attributes

Biodiversity attributes

Pareto cells: Biodiversity + ES above average

Bugalho, Dias et al 2016 Agroforest Syst
Take home message:

Creation of conservation portfolios (in silvopastoral or other systems) implies dealing with:

• Multiple ecosystem services
• Multiple biodiversity attributes
• Multiple landowners

• Pareto optimization may be used to identify target areas