

## ECOSYSTEM SERVICES IN FOREST AREAS - BALANCING CARBON STORAGE AND BIODIVERSITY (MiMOSE project – FIRB 2012)

Lucia Pesola, Raffaele Laforteza, Elena Gioscia, Giuseppe Colangelo & Giovanni Sanesi  
Dipartimento di Scienze Agro-Ambientali e Territoriali - University of Bari Email: [lucia.pesola@uniba.it](mailto:lucia.pesola@uniba.it)

### PROJECT GOAL

The MiMOSE project (*Development of innovative models for multi-scale monitoring of ecosystem services indicators in Mediterranean forests*) aims to investigate ecosystem services in forest landscapes by analyzing the relationship between carbon storage in biomass (Fig.1) and the amount and patterns of biodiversity at different spatial and temporal scales. The project will explore the effects of alternative forest management scenarios on changes in ES indicators values of ES in two main study areas.

Changes of ES indicators under different forest management scenarios will be compared to identify spatial locations and specific forest management scenarios that would lead to a “win-win” outcome, where all, or almost all, objectives can be increased relative to current conditions, and those situations where outcomes necessarily would lead to trade-offs.

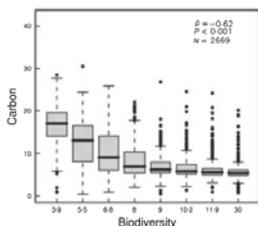


Fig1. Associations between Biodiversity and Ecosystem Service Variables. Biodiversity and Carbon at 100 km<sup>2</sup> resolution, Anderson et al. *Spatial covariance between biodiversity and other ecosystem service priorities*, Journal of Applied Ecology

### PROJECT OVERVIEW

For the purpose of the MiMOSE project, we will focus on topics such as:

- Processing data methods related to the presence of herbaceous vegetation, shrubs and trees (WP5)
- harmonization procedures for easy access and use of geodata (WP5)
- application of spatial-explicit methods for the evaluation of the spatial variables in relation with management scenarios (WP7).
- application of indicators and models for calculating the trade-offs to understand relationships of competitive or synergistic relationships of different ES (WP7).

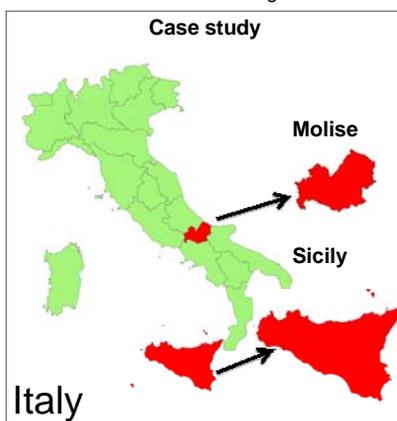
### SCENARIO DEVELOPMENT

Scenarios of land-use/land-cover:

- Abandonment forest
- Conservation forest
- Management and conservation forest (good forestry practices)

Study areas will be selected within the Italian regions of Sicily and Molise, where we have:

- High variability in forest
- Different types of management
- Data of carbon storage



### EXPECTED RESULTS

- Cutting-edge statistical methods will be developed to predict or estimate the value of ES indicators within a given spatial extent and will be defined in order to monitor progress over time
- Scenarios will be defined in each test area based alternative management strategies aimed to improve ES provision
- Forest management alternatives for each test area will be simulated over time and space.

By understanding the relationship between carbon and biodiversity in forest landscapes, planners and decision makers should be able to incorporate ecosystem services into urban and periurban areas thus informing land-use and management decisions and to maximize the net benefits that ecosystems deliver to urban society.

