

# THE 60<sup>TH</sup> IAVS ANNUAL SYMPOSIUM



Vegetation patterns in natural and cultural landscapes

## Abstract books

edited by  
R. Guarino - G. Bazan - G. Barbera



**PALERMO  
UNIVERSITY  
PRESS**

**Local Organizing Committee**

Riccardo Guarino (Chair)  
Giuseppe Barbera  
Giuseppe Bazan  
Salvatore Brullo  
Chiara Catalano  
Giannantonio Domina  
Lorenzo Gianguzzi  
Giampietro Giusso del Galdo  
Vincenzo Ilardi  
Manfredi Leone  
Corrado Marcenò  
Pietro Minissale  
Salvatore Pasta  
Rosario Schicchi  
Angelo Troia

**International Steering  
Committee**

Alicia Acosta (Italy)  
Elgene Box (Georgia, USA)  
Bruno E.L. Cerabolini (Italy)  
Alessandro Chiarucci (Italy)  
Milan Chytrý (Czech Republic)  
Sarah Cousins (Sweden)  
Martin Diekmann (Germany)  
Alessandra Fidelis (Brazil)  
Kazue Fujiwara (Japan)  
Daniela Gigante (Italy)  
Riccardo Guarino (Italy)  
Monika Janisova (Slovak  
Republic)  
Jonathan Lenoir (France)

Javier Loidi (Spain)  
Peter Minchin (Illinois, USA)  
Ladislav Mucina (Australia)  
Dave Roberts (Montana, USA)  
Wolfgang Willer (Austria)  
Susan Wisser (New Zealand)

**Organized by**

Università degli studi di  
Palermo  
Forum Plinianum  
Società Italiana di Scienza della  
Vegetazione (SISV)

The abstracts were evaluated  
by the international steering  
committee

<http://iavs.org/2017-Annual-Symposium/Home.aspx>

editorial composition and  
graphic: Palermo University  
Press

copyright: University of Palermo  
ISBN (a stampa): 978-88-99934-43-9  
ISBN (online): 978-88-99934-40-8

## Canullo R.

Poster nr. 047

### **Effects of climate, soil, structure and management on functional traits in forest understory**

Session: Functional diversity along environmental gradients

Stefano Chelli<sup>1</sup>, Enrico Simonetti<sup>1</sup>, Giandiego Campetella<sup>1</sup>, Stefano Carnicelli<sup>3</sup>, Anna Andreetta<sup>3</sup>, Nicola Puletti<sup>4</sup> and Roberto Canullo<sup>1\*</sup>

<sup>1</sup>*School of Biosciences and Veterinary Medicine, Plant Diversity and Ecosystems Management Unit, University of Camerino, Italy;* <sup>2</sup>*Faculty of Science and Technology, Free University of Bozen-Bolzano, Italy;* <sup>3</sup>*Department of Earth Sciences, University of Florence, Italy and* <sup>4</sup>*Council for Agricultural Research and Agricultural Economy Analysis, Research Unit for Forest Monitoring and Planning, Trento, Italy*

\*Presenting author: roberto.canullo@unicam.it

Many studies explored how the observed pattern of plant functional traits (PFTs) may be influenced by environmental variables. However, studies on forest ecosystems including also stand structure and management are lacking. A first attempt to test the relative effect of variables related to the latter groups, together with climate and soil gradients, on the community weighted mean (CWM) values of PFTs was performed on forest understory in Italy.

The Level I biodiversity dataset (extensive CONECOFOR network) has been used, based on a probabilistic sampling design, by 201 sites on a representative 16 x 16 km systematic grid. Following a harmonized protocol (ICP Forests, BioSoil-Biodiversity project) 29 explanatory variables were recorded and four plots 10x10 m have been surveyed for vascular specific cover, on each site.

Variance partitioning was used to identify the relative role of climatic, soil, structural and management variables on the CWM values of specific leaf area (SLA), plant height (H) and seed mass (SM). Redundancy analysis was used to assess the relation between traits and variables.

The combination of the selected variables explained the variation of H (34.3%) better than SLA (14.9%) and SM (11.1%). Climate alone, and in combination with other variables, demonstrated to explain the largest proportion of the variation for H (29.5%) and SM (9.3%); however, also structure and soil showed a relevant role. Forest management (9.9%) and structure (5.4%) were the main drivers for SLA.

Considering a gradient of increasing temperature, aridity and nutrient availability, we detected plant understory communities with higher mean values of H and SM. High-SLA communities appeared in forests characterized by a larger amount of deadwood.

The 60th IAVS annual Symposium Palermo, June 20-24, 2017

In forest understory vegetation, the PFTs pattern is linked to a complex combination of variables. Not only climate and soil, but also forest structure and management played a role, suggesting the importance of taking into account such parameters in future research, at larger spatial scale including different Country-level policies. The variation of SLA, H and SM is controlled by different variables, making no obvious any attempt to predict the effects of climate and land-use changes on understory functional signature.