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6th International Conference on

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April 27-28, 2017 Dubai, UAE

Keynote Forum (Day 1)



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Vassiliki Vassilopoulou

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Cumulative impact assessment as a key conservation planning tool: An application on *Posidonia oceanica* meadows in Greek waters of the Aegean Sea

Cumulative impact assessment is a computational tool for quantifying and visualizing the consequences of a combination of pressures caused by human activities on ecosystem components. It is a fundamental process in Conservation Planning and Marine Spatial Planning efforts based on an Ecosystem-Based Approach. For assessing the sum of impacts on ecosystem components, a well-developed approach that takes into consideration the presence/absence grid data of human activities and ecosystem components has been used. This approach requires a thorough knowledge of human activities (intensity, location) and ecosystem components (i.e. vulnerability, resilience) to assess their collective impacts. In this study, a key ecosystem component for the Mediterranean, the *Posidonia oceanica* meadows, has been selected aiming to identify areas where the status of this priority habitat is threatened and hence deserve the attention of the management authorities. As a first step, geospatial data of human activities and existing management measures were collected and processed. An impact score representing the per-pixel (1 km*1 km cell) average of *Posidonia oceanica* meadows vulnerability-weighted stressor intensities was calculated and mapped. According to the impact score, the total pressure on this ecosystem component was very low (79.8%) in the vast majority of the area where *Posidonia oceanica* extends (Figure 1). However, certain locations where the exerted pressures on sea grasses seemed to be rather high were identified in the sea regions of Chalkidiki, Attica, Southern Aegean Sea and Crete. These pressures appeared to be mainly connected to drivers such as small scale fishing, urbanization, ports and agricultural run-off. The latter suggest that aside from truly marine activities (e.g. small scale fishing), the importance of land sea interactions is also crucial for determining the status of coastal ecosystems.

Biography

Vassiliki Vassilopoulou (PhD) is a Research Director at Hellenic Centre for Marine Research, Greece. She is involved in research activities in the field of ecosystem-based fisheries management. Since 2009, she has been engaged in Maritime Spatial Planning research issues through her involvement in several EU projects. In the last years, she is also working on issues related to the development of a more efficient interface between policy needs and scientific advice through interaction with key stakeholders. She has acted as chairperson or moderator, and/or was an invited speaker, in sessions dedicated to topics of her expertise in international conferences and workshops, and has been giving pertinent postgraduate lectures in the Universities of Athens and Thessaloniki. She is member of International Scientific Committees and has recently joined the Commission on Ecosystem Management (CEM) of the IUCN. She has more than 150 publications and presentations in international scientific journals and conferences.

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Zhanqing Hao

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Functional and phylogenetic temporal turnover in two temperate forests in Northeast China

Whether deterministic or stochastic processes dominate temporal turnover of community composition and which factor has significant influence on that turnover, has been a central challenge in community ecology. Functional and phylogenetic temporal beta diversity can capture important insights of the underlying processes. In this study, we focus on functional temporal turnover based on 14 functional traits and phylogenetic temporal turnover using fully mapped data in two large temperate forest plots at different successional stage. We found that 1) Deterministic processes are the main process for both forests and size classes. The functional and phylogenetic compositions are relatively constrained at late successional stage and changed dynamically at early successional stage. Moreover, the functional and phylogenetic turnover of two size class trees have contrary tendency at different succession stage, which may be due to the similarities among death, recruitment and survival individuals. 2) Principal components and null model analysis showed that functional traits that are more related to “nutrient economy” and structure investment can significantly influence the temporal turnover; 3) Biotic factors (e.g., basal area of neighborhood) play an important role in influencing functional and phylogenetic temporal turnover for both forest plot. In conclusion, our analysis clearly emphasizes the functional and phylogenetic temporal turnover are deterministic at local scale. In addition, identification of key functional traits are important for functional diversity analysis, which can contribute to a better understanding of local community assembly mechanisms.

Biography

Zhanqings Hao focused on the biodiversity and ecological functions. As one of the Chinese scientists who participated in biodiversity research, he initiated the establishment of 25ha temperate permanent monitoring forest plot in Northeast China in the year 2004, which is the earliest temperate forest plot in China. He has been an important member of Chinese Forest Biodiversity Monitoring Network (CForBio). After that, a series of forest plots had been established along successional stages and latitude gradients. All those forest plots provided the opportunity to detect the biodiversity patterns and maintaining mechanisms in temperate forests.

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Charles A Wade

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The urban forest: Created biodiversity

The urban forest is much more diverse than any surrounding natural forest in many parts of the United States. This “Created Biodiversity” is the result of the continuous introduction of new tree species to the urban forest. The three main driving forces behind this urban biodiversity are: Choices of people (based primarily on socioeconomic factors and the desire to plant “something different” in their yards), the heterogeneity of urban habitats where we have formed many new and different habitats that are not necessarily natural environments for native tree species, and the introduction of non-native species which are sometimes potentially invasive and leads to a change in the natural tree composition of the city. This created biodiversity is not a natural assemblage of tree species, but a makeshift community based on human desires and choices. A survey of the urban forest was conducted in 1980 in ten selected Midwest, USA cities. The survey was then replicated in six of these cities. The urban forest composition was then compared to natural forests in the vicinity of the original cities surveyed. It was found that the species richness was much greater in the cities, with 47 to 82 species, than the natural forests in the surrounding area of those surveyed cities which only had 18 to 23 species.

Biography

Charles A Wade is a Professor of Biology at Mott Community College in Flint, Michigan. He is involved in giving lectures and taking up laboratory classes, such as General Biology (non-science majors), Applied Botany, Environmental Science, General Botany, Michigan Flora, Local Trees and Shrubs, General Ecology and Field Biology, over a two-year period. His research interests include urban forest ecology, urban ecosystem services, changes in the urban forests over time and the sustainability of the urban forest vegetation. He is also interested in helping educate people on the selection of the correct tree for the desired location as well as the health and conditions of the urban and peri-urban forest.

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Bozena Mitic

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Pollen as a microscopic key for understanding biodiversity – Case study on the Genus *Iris* L. (*Iridaceae*)

Presence of variety of plants is an essential component of biodiversity, which ensures the survival of the whole Earth. The research of plant evolution, phylogeny and richness is a permanent need for the human race. One of the incredibly informative and often neglected disciplines in biodiversity research is palynology, the study of pollen grains and spores. It could provide us evidence on plant history, evolution and phylogeny. The potential of palynology in researching the diversity of plants will be demonstrated by the case study on the large and complex genus *Iris* L., which consists of about 300 species, widespread in the northern hemisphere. The current classifications, based mainly on morphology and molecular phylogeny, suggest a division of the genus *Iris* into six or more subgenera and numerous sections and series. Irises grow on diverse natural habitats, especially in the southern and eastern parts of Europe, where on a small geographical range, a variety of climate and ecological conditions resulted in a big diversity of irises. The aim of this study was to investigate pollen features of the genus *Iris* and to contribute to the better knowledge of their species richness. The results showed that some palynological features could have taxonomical and evolutionary importance, and at least four pollen types could be recognized and taxonomically delimited to the series level. The taxonomic, phylogenetic and evolutionary implications have been evaluated, and the possible pathway of evolution of the genus *Iris* was suggested (Fig. 1) from the subgenus *Linniris* to the subgenus *Iris*. Furthermore, some hotspots of irises and the needs for the conservation of their diversity will be briefly suggested and discussed. To conclude, palynology as a tool for phylogenetic and evolutionary studies can give us a better insight in the evolution and diversity of plants and ensure a better knowledge for their conservation.

Biography

Bozena Mitic has her expertise in several fields of Botany. At the beginning of her research career, she had a PhD degree in Plant Taxonomy and Systematics. She was involved in some nomenclature investigations, but she has also participated in research on Croatian flora. In the past 10 years, her research activities were extended on invasive alien plants and palynology. Together with colleagues, she developed national standards and the preliminary list of invasive alien plants for Croatia. She permanently works on the mapping and distribution of invasive alien plants in Croatia, and currently, she is on the revision and updating of the list of alien plants in Croatia. She launched modern palynological researches in Croatia and introduced a course on Palynology at the University of Zagreb, which piqued considerable interest among students. Since 2004, she has collaborated with the palynological group at the University of Vienna (Institute of Botany).

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