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**Vegetation Diversity and Global Change**

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**ABSTRACTS & PROGRAMME**

Pharmacology, Pharmacognosy and Botany Department  
Pharmacy. Complutense University

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## Keynote Lectures

## Calcareous fen succession in Engure Lake Nature Park in Latvia

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Vegetation of calcareous fen in Engure Lake Nature Park (West Latvia) was studied. The nature park includes coastal freshwater lake, dry pine forests on coastal dunes, swamp forests, coastal grasslands, calcareous fens, and reed swamps. Engure Lake is a lagoon lake that was formed after regression of the Littorina Sea ca. 4,000 years ago. In 1842, after artificial lowering of the water level for 1,5 m the elevations in the former lake bottom started to overgrow with *Pinus sylvestris* woodland. In lower depressions, calcareous fen vegetation developed on sand and lake gyttja deposits. The fens are young; therefore, the peat layer is very thin or absent, and due to permeable ground, the water table is highly fluctuating.

Fen vegetation was first described in 1988. It is located in a depression between the ancient coastal formations of Litorina Sea and on the former bottom of the Engure Lake. The vegetation was sampled in a transect with 57 1 x 1 m square plots using Braun-Blanquet method. Sampling was repeated in 2018, in total 114 relevés. Our aim was to reconstruct the vegetation changes during the 30-year period which might provide ideas for further management of this area.

Thirty years ago, the lowest part of the depression was covered by shallow water with sparse vegetation composed of *Phragmites australis* and *Cladium mariscus*. The elevated parts of the fen were occupied by *Schoenetum ferruginei*. During the 30-year period, the wet depression has overgrown with *Cladietum marisci* community. However, the comparison of two periods clearly show that the area of *Schoenetum ferruginei* decreases on the expense of the expanding *Cladietum marisci*.

*Schoenetum ferruginei* is a typical community in the area surrounding Engure Lake, though very rare in Latvia. The Engure fens are species-rich, always dominated by *Schoenus ferrugineus* and constantly accompanied by *Phragmites australis*, *Primula farinosa*, *Epipactis palustris*, *Carex panicea*, *C. flacca*, *C. hostiana*, *C. serotina*, *Sesleria caerulea*, *Parnassia palustris*, *Pinguicula vulgaris*, *Equisetum variegatum*, etc. Rare, protected plant species are present, e.g. *Taraxacum palustre*, *Carex scandinavica*, *Dactylorhiza cruenta*, *Dactylorhiza ochroleuca*, *Liparis loeselii*, *Ophrys insectifera*. Bryophytes, such as *Campylium stellatum*, *Calliergonella cuspidata*, *Fissidens adianthoides*, *Scorpidium scorpioides*, *Bryum pseudotriquetrum*, *Preissia quadrata*, *Riccardia multifida*, and *Aneura pinguis* are common. The highest richness of species is found in the transition stage between open fen and forest, whereas the expansion of *Cladium mariscus* in wet depressions leads to decline of species richness. *Schoenetum ferruginei* is gradually replaced by *Cladietum marisci* (typically dominated by *Cladium mariscus*, accompanied by *Scorpidium scorpioides* and few other species).

The Engure fens are slightly affected by drainage impact and cessation of traditional grazing by free-roaming cattle. This has resulted in tree and shrub encroachment and might soon lead to decline of rare plant species. Therefore, restoration of fen by blocking the ditches and clearing the trees and shrubs is planned in 2019. Vegetation monitoring is combined with hydrological monitoring, greenhouse gas measurements, and planning of management actions for longer period of time within the EC LIFE project “Reduction of CO<sub>2</sub> emissions by restoring degraded peatlands in Northern European Lowland”, LIFE 15 CCM/DE/000138, LIFE Peat Restore.