

Mechanisms of herbaceous vegetation restoration successions

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The vegetation dynamics study is an important sector of research in phytocenology. The changing vegetation mechanisms' studying with the purpose of forecasting and management processes is an urgent theoretical and practical task.

We consider succession as successive series of composition changes and phytocenoses structure caused by internal reasons and external ones. In this case, we are dealing with natural, secondary and progressive successions. The rapid sequential change of associations aimed at restoring coenotic environment and not resulting in ecogenesis stage changes is called demattia. Fully restored coenotic environment corresponds to vegetation sublimation. The way to this most stable state goes via a number of derived associations, each of them can be seen as long phytocenotic sustainable phenomenon, but different in time.

The ability of living beings to reproduce in one way or another, their spreading, filling the space and confrontation to adverse conditions presents an important preservation mechanism and biodiversity increase, as well as its sustainability. The bio-diversity indicator is very significant for stability maintainment and phytocenosis estimation.

Succession mechanisms classification provides three categories of relationships between organisms in the successional series: model relief or stimulation corresponds to the phase of endoecological succession which means that early settlers in their activities change the environment, making it available for the next wave of colonists. The model of tolerance manifests itself in the form of competitive relationships, resulting in selection of more competitive species with a pronounced feature S.

According to the inhibition model, all types of community are able to colonize open spaces, they are resistant to competitors invasion, but the later species are able to inhabit and increase their number only after the loss of any of the predecessors. The predecessors change environment settings making it less suitable for later species.

The fourth model of neutrality corresponds to the succession, considered as a population process, with the change of species populations of different life cycles and different ecological-phytocenotic types of strategies. Often this model applies only to the formation of the species composition but quantitative ratios between the species are caused by a weakened manifestation of favored, inhibiting or tolerance effects.

All the mechanisms together provide the plant communities development from the beginning stages to the end due to system feedbacks (positive and negative). In the first stages of succession the ecosystem is able to resume quickly, indicating a fairly high resilience, which means the movement to a climax is constantly decreasing. The trend is opposite for self-sustainability or stability. In the early stages of succession, its value is low enough – the systems are very sensitive to external influences, responding to them with increased dynamism. The resident resistance is continuously growing with species increasing. As you get closer to menopause, the ecosystem becomes more sensitive to the effects of some catastrophic environmental factors, which means that with ongoing stable growth the factor of ecosystem rigidity going to a climax apparently even begins to decrease.