

INFLUENCE OF SIMPLIFICATION OF MEADOWS PLANT AGGLOMERATIONS ON SOIL BIOLOGY AND DECOMPOSITION PROCESSES. BIOINDICATIVE ROLE OF SOIL FAUNA

S u m m a r y

Species diversity of plants declines recently in many ecosystems. Searching for the reasons of this phenomenon was the subject of our study. The main study area was located in North-Eastern Poland on the meadows within the Suwałki Landscape Park and its buffer zone, and supplemented by studies in other places. The results presented were collected during long-term interdisciplinary studies, consisting of observations, collecting samples, laboratory analyses and mesocosm experiments. The recognition of functional significance of sward species richness was done through analysis of differences in soil invertebrate communities and of the decomposition pattern in meadows at different stages in secondary succession. Sward species richness increased with increased age of meadows, from young meadows (grass monocultures) to permanent meadows (about 30 plant species). The role of animals in the transformation of organic substances and in the nutrient storage was also investigated. We concluded that it would be

reasonable to increase the area of old leys and permanent meadows for more efficient regeneration of organic matter in cultivated soils.

Any detrimental effect to soil biodiversity becomes evident above ground in the form of changes in the habitat. Biological indicators appear to provide an integrated measure of the severity of impact of these effects on soil. The maturity index (MI) provides a measure of successive maturity. Considering pollution and perturbations in an ecosystem as distortions of the natural process of succession, facilitates assessment of the quality of environment differing in the vegetation type, plant age, management regime and the temporal effect of stress. Thus, it becomes possible to evaluate the return to the previous state following the disappearance of an induced stress. Examples of using maturity index in evaluating biodiversity in our studies are presented.