Bachelorarbeit

Vegetationsentwicklung auf renaturierten Auewiesen

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Abstract

In this thesis the long-term development of species-rich flood meadows on a restoration site as well as the effects of topsoil removal and hay transfer were analysed.

The restoration site of the Justus-Liebig-University of Gießen is located in the dyke-protected fossil floodplain of the northern Upper Rhine near Darmstadt. The former arable field is indirectly flooded by ascending groundwater going along with high water levels of the Rhine. After topsoil removal to a depth of 30 or 50 cm hay of well developed oligotrophic Molinion meadows and mesotrophic Cnidion meadows was spread out in strips onto the former field.

In order to compare the nutrient status of the soil as well as the productivity of the site with those of the source stands and a nearby arable field, samples of soil and biomass were taken. The vegetation was recorded annually.

By the use of topsoil removal the nutrient status at the restoration site even fell below the level of the source stands. The vegetation at the restoration site showed very low productivity which is typical for such plant communities adapted to nutrient-poor conditions.

In those ten years of observation the vegetation development can be subdivided into three phases. First there was a change from domination of arable weeds and ruderals to a vegetation mainly consisting of grassland and plant material species. The second phase was characterized by a decline in plant cover due to extremely dry summers in succession. In the following years especially the plant material species were able to recover and became even more dominant than before.

The establishment of highly endangered target species was very successful, the transfer rate of plant material species added up to 70-85 %. The highest restoration success was found in those areas which were regularly flooded. Even several years after the hay transfer new target species could be found on the restoration site.

However, in the last years the strips were increasingly dominated by the woody chamaephytes *Ononis spinosa* and especially *Genista tinctoria*. This recent development has to be monitored in order to preserve the diversity of these new successfully established flood meadows.