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[Deutsch]

Renaturation of hybrid poplar stands with the example of xylobiontic fauna in the “Regelsbrunner Au” (Nationalpark Donau-Auen in Lower Austria)

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Deadwood plays a central and stabilising role in forest ecosystems. The short turnover times in commercial forests and the removal of deadwood lead to the reduction of an important basic resource for already vulnerable xylobiontic species. The termination of forestry (“Außer-Nutzen-Stellen”) operations for large forest areas in the “Nationalpark Donau-Auen” and related renaturation actions by the WWF are a first step towards a near-natural floodplain forest.

Comparing the three investigated sites in respect to the different methods of renaturation it can be said that site 1 (group selection without removal) is the driest location. Here trunk decay proceeds slowly, and as such only few succession stages have developed so far. The fauna are dominated largely by Coleoptera and Diptera, which prefer freshly cut trees with little decomposed bark and plenty of sap.

Site 2 (juvenile spacing) and site 3 (group selection with removal) have already regained some of their natural-forest character after just a year and a half, which is apparent by the increased occurrence of hygrophilous Carabidae (e.g. *Platynus assimilis*).

Due to the sampling method (manual sampling), the low number of samples and the short investigation period, the number of individuals or of certain species alone can be no indicator for the preference of a certain renaturation action. The environmental conditions (age of the trunks, microclimate, soil type, food supply) are all too similar at the different sites. Contrary to expectations it is not possible at that time to identify unambiguous differences regarding the effectiveness of the different renaturation actions related to the abundance of certain deadwood dwelling species. Hence it is not possible to give any reliable recommendation in favour of one method. However, bearing in mind the advice of several researchers (RÜEGG 1995, ZABRANSKY 1998) to leave more trunks with sufficient dimensions (diameter > 20cm, length > 2m; ERDMANN & WILKE 1997) in the forest, 'group selection without removal' should be continued.

The increasing importance of old- and deadwood for nature conservation are a significant contribution to the protection of forest ecosystems. The challenge is to try to understand the highly diverse requirements of these groups of organisms, to create and implement useful concepts for the protection of deadwood.

The necessary range of structures and niches for high biodiversity are only available when deadwood across the full spectrum of decomposition occurs together. The protection of biotopes is however crucial for the sustainable safeguarding of communities, which in the long-term only makes sense if the protected areas are large enough and migration from one to another can occur (WINTER 1988). It is thus essential that these areas are preserved, but

in the future we should think about linking different areas (ROLSTAD et al. 2004). Furthermore, there is the need for continuous supply of material to raise the amount of deadwood gradually to a natural level in order to provide the xylobiotic fauna with a variety of stages of decay.

In the end, the precondition for the preservation of natural-forests is to abandon forestry use (cf. GEISER 1994, ZABRANSKY 1998).

According to the MOBI-e report 2006, which compared the surveys of 1971-1980 and 2000-2002 quantity and volume of dry wood in Austrian deciduous and coniferous forests has more than doubled. A Europe-wide recommendation of the WWF (2004) assumes an average of 20-30 m²/ha until 2030. This positive trend could be used to continue to gradually raise the percentage of deadwood in Austrian forests (compare also SAUBERER et al. 'Nachhaltiges Waldbiomassenmanagement im Biosphärenpark Wienerwald').