

Seed germination from deposited sediments during high winter flow in riparian areas

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Flooding has long been recognized as an important factor structuring vegetation in riparian areas mediated through different hydro-morphological processes. Flooding may also affect the vegetation by supplying seeds and vegetative fragments that may establish in the areas. In this study we investigate seed germination from deposited sediment in different distances from a re-meandered river channel along River Odense, Denmark and examine how richness, diversity and composition vary along gradients in sediment characteristics. We established a transect perpendicular to the stream channel extending 101 m into the stream valley. Sediment samples were collected in a total of twenty five 20 x 20 cm artificial grass mats positioned 2, 16, 23, 41, 70 and 101 meters from the stream. The germination was followed for 6 weeks under respectively moist and wet conditions in a greenhouse with a natural light regime and a mean temperature of 20 °C. The germination was most successful under moist conditions where the number of seedlings emerging ranged from 1050 to 3817 m⁻². Species richness (10.7±1.5 species), diversity (2.13± 0.13) and evenness (0.90±0.03) peaked in samples taken 16 m from the stream channel. Overall the number of seedlings correlated positively with distance from stream and organic matter content in the sediment, and negatively to the C/N content of the sediment. Conversely species richness and diversity correlated negatively with distance from stream and organic matter content but positively to C/N. Our results clearly demonstrate that deposited sediments have large contents of viable seeds and also the potential to introduce variability in compositional patterns in riparian areas where the interaction between river and riparian areas is rehabilitated through active or passive restoration