
Seed banks across floodplains: a study in five major habitats of the Middle Loire River (France)

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Abstract

The role of seed banks in the assembly of plant communities has been a rising topic within recent years. Goodson et al. (2001) identified riparian seed banks to be a neglected area of river research, and seed banks in riparian systems a poorly investigated ecosystem type in seed bank research. Since then, a series of studies concerning riparian seed banks have become available. Most studies however concentrate on only a small range of habitats or low-energy lowland rivers of moderate size. The present study investigates seed banks in relation to standing vegetation in the floodplain of a great river with high-energy floods and over the whole range of floodplain habitats, i.e. over a wide disturbance and successional gradient. It aims to test current hypothesis on seed bank density, composition, spatial variability with regard to disturbance gradients and seed bank persistence.

The study took place on the Loire river floodplain in the Center of France and concerned its five most frequent habitats types: 1. sand banks or sandy river shores with scarce pioneer vegetation, 2. Softwood (*Populus nigra*) shrubs, 3. Softwood forest, 4. Mature forest, 5. *Elytrigia*-dominated grasslands. While seed banks from different habitat types showed clear differences in species composition, they were rather similar with regard to average values of most other descriptors. The most frequent species occurred at a limited portion in the standing vegetation but over a wider range of the floodplain gradient, thus illustrating the extent of lateral dispersion, the local species pool and effect of environmental filters. Significant differences in intra-habitat variability of seed bank characteristics suggest different processes in seed bank formation. Those processes will be discussed.

Goodson, J.M., Gurnell, A.M., Angold, P.G. & Morrissey, I.P. (2001) Riparian seed banks: structure, process and implications for riparian management. *Progress in physical geography*, **25**, 301-325.

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