Impact of seedbed and water level on the establishment of plant species associated with bog pools

IMPLICATIONS FOR RESTORATION

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ABSTRACT

Our study found that a water level close to the surface and a seedbed composed of bare peat or a Sphagnum carpet favored the germination of vascular species associated with pools in peatlands. A greenhouse experiment was conducted to study the impact of seedbed and water level on the germination and growth of 7 plant species associated with pools: Carex limosa L., C. magellanica Lam. ssp. irrigua (Wahlenb.) Hultén, C. oligosperma Michx., C. pauciflora Lightf., and Rhynchospora alba (L.) Vahl from the Cyperaceae family as well as Drosera intermedia Hayne (Droseraceae) and Scheuchzeria palustris L. (Scheuchzeriaceae). The 3 seedbeds tested were 1) bare peat; 2) a carpet of Sphagnum cuspidatum Ehrh. ex Hoffm. and S. fallax (Klinggr.) Klinggr. (Sphagnaceae); and 3) a carpet of Cladopodiella fluitans (Nees) H. Buch (Cephalozaceae), common bryophytes along pool edges. Seedbeds were combined with 2 water levels (0 and 10 cm below the soil surface) in a complete factorial block design. Germination periods were generally longer when seeds were submitted to drier conditions and placed on C. fluitans carpets. Conditions favoring biomass production were more variable among species. These results will facilitate the identification of the best ecological conditions for successful establishment of pool edge species in the context of restoration projects, thereby increasing biodiversity and ecological value of restored peatlands.


KEY WORDS
seed germination, pool margin, Carex, peat stability, seed viability, bryophyte, greenhouse experiment

NOMENCLATURE
Plants: USDA NRCS (2012)
Bryophytes: Faubert (2007)