



REPEAT: REstoration and prognosis of PEAT formation in fens - linking diversity in plant functional traits to soil biological and biogeochemical processes (2017-2019)

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REPEAT is a research project funded from ERA-NET co-funded BiodiVERsA programme. REPEAT consists of partners from Poland, Germany, Belgium, Norway and Romania and has all together 96 study sites in Wales, the BeNeLux, Germany, Poland and Romania. Our main research question is to assess how environmental factors and human management interact with soil biodiversity in determining rates of peat accumulation in undrained and rewetted fens. Specifically, we study the impacts of drainage degree (i.e. pristine, drained and rewetted sites), trophy (sites with different nutrient availability and associated plant productivity) and mowing (on sites that are used for paludiculture) on peat formation and decomposition using an assembly of state-of-the art and innovative methods. We record hydrological, hydrochemical and management statuses, peat decomposability (C/N ratios and OM fractions with CN analyzer and FTIR, respectively) as well as greenhouse gas concentrations and nutrient stoichiometry (in depth gradient) for each of the sites in 2017. Subrecent peat formation at the sites is measured using fine-resolution macro- and microfossil and radio-isotope studies (^{14}C , ^{210}Pb , ^{137}Cs). Below-ground biomass production and decomposition is assessed using in-growth and litter bags, respectively (2017-2018). Additionally, we carry out in depth studies on taxonomical and functional biodiversity of both producer and decomposer communities. We aim at developing and improving existing peat accumulation models to be better suited for fen ecosystems as well as for providing information on management practices, particularly on rewetting. We will also provide recommendations for management and restoration of fens and develop a practical method to assess peat formation in restored fens feasible to be implemented by stakeholders.