Wetlands restoration for the future - ALFAwetlands

Ukonmaanaho Liisa[1], Larmola Tuula[1], Aalto Tuula[2], Andersson Erik[3], Soosaar Kaido[4], Barthelmes Alexandra[5], Abramchuk Marina[5], Balkovic Juraj[6], Haltia Emmi[1], Shchoka Iryna[7], Raman Maud[8], Decleer Kris[9]; Lazdiņš Andis[10], Peñuelas Josep[11], Descals Adrià[11], Sanchez-Perez José Miguel[12], Gonzalez Odette[13], Tournebize Julien[14], Sabater Comas Francesc De Paula[15]

Wetlands cover 5-8% of the Earth's land area. Apart from harbouring significant biodiversity, they also currently store around 225 billion metric tons of carbon. Their waterlogged nature creates ideal conditions for highly stable carbon volumes. Healthy wetland environments therefore have a major role in tackling the climate crisis. Their restoration would provide a nature-based solutions to reducing greenhouse gas emissions and thereby mitigating the severe effects of climate change. The global goal to mitigate climate change (CC) is to achieve net zero greenhouse gas emissions (GHGE) by 2050; the European Union (EU) aim is to cut GHGE at least by 55% already by 2030.

Aims

- The main objective of ALFAwetlands (www.alfawetlands.eu) is to mitigate CC while supporting biodiversity and ecosystem services (BES) and being socially just and rewarding. This includes, e.g., increasing the knowledge about C storage and release in peatlands, specifically after restoration.

Methods

- ALFAwetlands is Horizon Europe funded project (2022-2026), coordinated by Luke and carried out at local to EU levels with 15 partners across Europe.
- in terms of C fluxes, ALFAwetlands is focusing on **peatlands, floodplains, coastal wetlands and few artificial wetlands**.
- ALFAwetlands will develop and indicate management alternatives for wetlands including such that have been or will be restored during this project.
- Measures under this project are not restricted to ecological restoration but include rehabilitation and re-vegetation action to improve ecosystem conditions (e.g., peatland forest: continuous-cover-forestry, cultivated peatlands: paludiculture).
- Studies are conducted in 9 Living Labs (LL's) including 30 sites, which are locating in wetlands in different parts of Europe (north-south gradient) (Fig 1).
- At the local level, LL's support and integrate interdisciplinary and multi-actor research on ecological, environmental, economic, and social issues.
- Experimental data from local sites are scaled-up and will be utilized e.g., by models to gain and understanding the potential impacts of upscaled wetland restoration measures (Table 1).
- Five research WPs are being implemented, namely to
    1. improve geospatial knowledge base of wetlands
    2. co-create socially fair and rewarding pathways for wetland restoration
    3. estimate effects of restoration on GHGE and BES, with the data achieved from field experiments
    4. develop policy relevant scenarios for CC and BES
    5. study societal impacts of wetland restoration
- The project will also encourage stakeholders to utilise outputs and support their active participation in wetland management.

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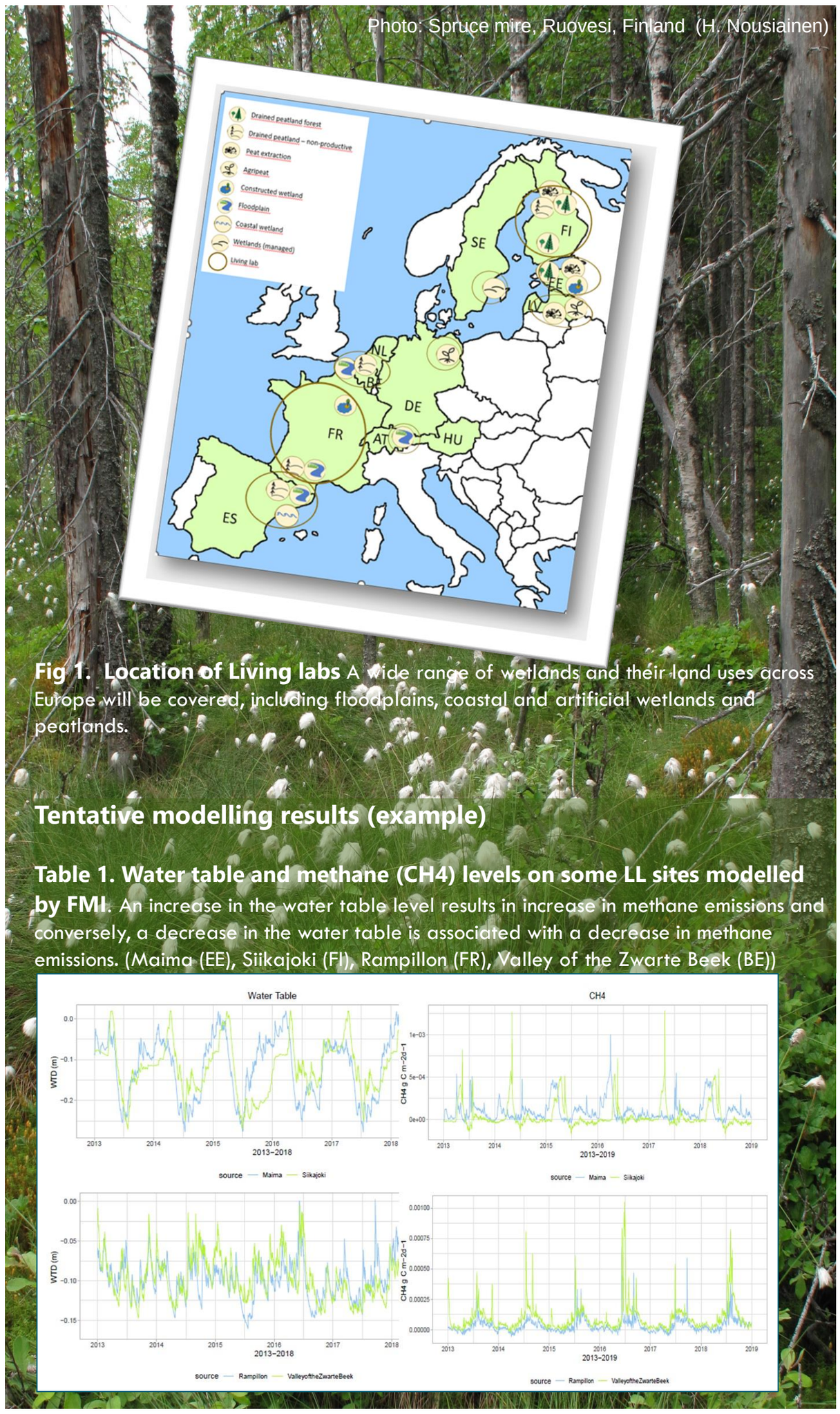

Fig 1. Location of Living labs A wide range of wetlands and their land uses across Europe will be covered, including floodplains, coastal and artificial wetlands and peatlands.

Tentative modelling results (example)

Table 1. Water table and methane (CH4) levels on some LL sites modelled by FMI. An increase in the water table level results in increase in methane emissions and conversely, a decrease in the water table is associated with a decrease in methane emissions. (Maima (EE), Siikajoki (FI), Rampillon (FR), Valley of the Zwarte Beek (BE))

[1]Natural Resources Institute Finland (Luke), liisa.ukonmaanaho@luke.fi, [2]Finnish Meteorological Institute (FMI), [3]Stockholm University (SU), [4]University of Tartu (UT), [5]Michael Succow Foundation (MSF), [6]International Institute for Applied Systems Analysis (IIASA), [7]European Wilderness Society (EWS), [8]Research Institute Nature and Forest (EVINBO), [9]Society for Ecological Restoration Europe (SER), [10]Latvian State Forest Research Institute (SILAVA), [11]Centre for Ecological Research and Forestry Applications (CREAF), [12]French National Centre for Scientific Research (CNRS), [13]Wetlands International European Association (WI), [14]Research Institute for Agriculture, Food and Environment (INRAE), [15]University of Barcelona (UB),

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