

EGU2020-1243

<https://doi.org/10.5194/egusphere-egu2020-1243>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Use of Digital and 3D Visualisation Technology in Planning for Woodland Expansion

Chen Wang¹, Alessandro Gimona¹, Andrea Baggio Compagnucci¹, and Yang Jiang²

¹The James Hutton Institute, Aberdeen, United Kingdom of Great Britain and Northern Ireland (chen.wang@hutton.ac.uk)

²Robert Gordon University, Aberdeen, United Kingdom of Great Britain and Northern Ireland

Forests and woodlands offer many benefits to people. They can provide timber and food, store carbon to help deal with the effects of climate change, decrease flooding and soil erosion, and provide recreation for people and habitat for a multitude of species we care to conserve. Scottish forests cover roughly 19% of the country. The Scottish government has the ambition to add several thousand hectares a year over the next decades, to support the rural economy, the environment, and communities. It is important that a substantial proportion of the expansion is made up by native trees and shrub species due to better habitat for wildlife.

These challenges were explored with a case study of virtual forest landscape from Cairngorms National Park (CNP) which was used to test preferences for scenarios of future woodland expansion. Spatial Multi-criteria Analysis (sMCA) has been applied to decide where to plant new forests and woodlands, recognizing a range of land-use objectives while acknowledging concerns about possible conflicts with other uses of the land. The tools used in the development and implementation of the 3D model were PC and Mobile based, and enable the incorporation of interactive functionality for manipulating features. Model inputs comprise 5m DTM, 25cm Aerial Imagery, 3D Tree Species, GIS layers of Current Forest and Woodland Expansion inside CNP. Afforestation animation has been attached in Google My Maps. This is through setting different keyframes by storyboard camera path animation around the area of CNP. Stereo panorama has been applied to selection of woodland expansion scenarios (e.g. Broadleaved potential corridors, Conifer potential corridors), which is viewed with mobile technology and Virtual Reality (VR) equipment.

The 3D model with simulation of woodland expansion was used at the event of 2019 Royal Highland Show and European Forest Institute Annual Conference 2019. Audience feedback suggested the enhancement of user interaction through VR has potential implications for the planning of future woodland to increase the effectiveness of their use and contribution to wider sustainable ecosystems.