

Forest, Flood and Farmer

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Using forested landscapes for Natural Flood Management—a ‘Wicked’ problem?

In a world where the uncertainties of the weather are being compounded by climate change, the need for forested landscapes is the new paradigm and flood management is being directed towards more ‘natural’ methods, planting trees for floods has become a new ‘ideal’ with its own catchphrase ‘slow the flow’.

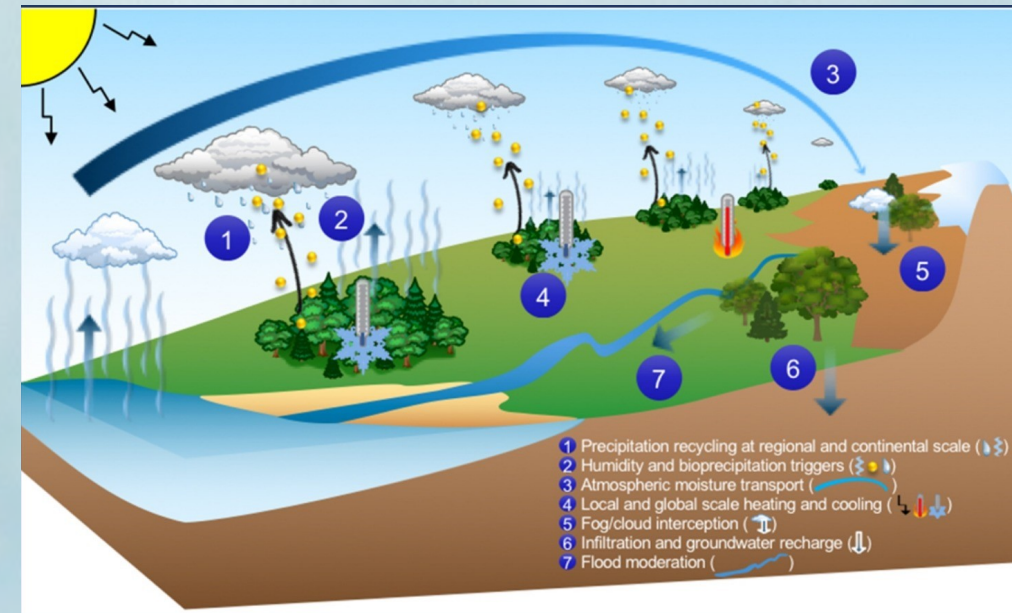


Figure 1: Effects of forests on water and climate at local, regional and continental scales through change in water and energy cycles from Ellison et al 2017

The interaction of trees and water is well researched but evidence for application of this knowledge for Natural Flood Management (NFM) is “context and scale specific”¹. The modelling process is highly uncertain when predicting outcomes and real events when reliant on all sorts of variables including the vagaries of the weather or management choices. A ‘Wicked’² (or post-normal) problem, solutions may rely on a deliberative process, “extended peer communities”³. How can these less quantitative contributions be bought into the planning process that relies so heavily on scientific modelling?

Can ‘socially’ determined parameters be integrated into traditionally quantitative methodologies of planning for land use change?

Whose Landscape? Identity, Politics and Land Use change

The Landscapes in the UK are all accounted for. Conflict and barriers to land use change have been linked to perceptions of landscape; ‘social’ factors involving values and interpretations of nature-culture. Natural Capital is a centralised teleological approach where ‘natural’ factors are assigned value in an endeavour to account for this⁴. The literature of landscape, identity and politics suggests that there may be more complexity to be tackled in the individualised, localised perceptions of landscapes. Phenomenological approaches, such as the dwelling perspective⁵, have enabled the identification and exploration of the importance of the landscape in place-identity. Recent research has taken these approaches and begun to analyse the impact of this lived experience on perspectives, choices and preferences. It has been identified that this both informs and enables political representation of landscapes and the choices that land managers make⁶.



Figure 3: Rae, Alasdair (2017): A Land Cover Atlas of the United Kingdom (Document). figshare. Paper.



Figure 2: Skirrid beyond the edge of the Blorenge—authors own

Can a qualitative understanding of lived experience explain the political behaviour and preferences of Land Managers when considering forested landscapes for NFM

Landscape and Land Use—Who are the ‘Experts’?



Figure 4: ‘Experts’ in a UK field - retrieved from <https://www.pagodapr.com/news-blog/2016/10/20/bellfield-brewery-first-in-the-uk-to-trial-new-gluten-free-barley/> 23.1.19

The neglect of local, rural knowledges, ‘lay’ expertise⁷ has impacted the effectiveness and uptake to land management and land use policy.

Although the rhetoric is changed, the engagement activities in areas such as Flood Management have not advanced in the same way.

There are two aspects to this neglect: the first is that of engagement; it has been demonstrated that early engagement of land managers increases the support and uptake of opportunities in natural flood management⁸

The second has been less well evidenced and that is of effectiveness: Is knowledge and information that could improve the efficacy of modelling forested landscapes for natural flood management being missed?

How does farmer/land manager knowledge and expertise inform the process of planning forested landscapes for Natural Flood management? Does involvement in this process affect the uptake and long-term planning of Land Managers?

What impact does an exploration of Land Manager perceptions and preferences have on planning forested landscapes for Natural Flood Management?

Interdisciplinary

Using a qualitative, grounded theory approach to identify perceptions and preferences, combining this with the hydraulic and hydrologic modelling, GIS mapping used for analysing catchment scale flood interventions and landuse change.

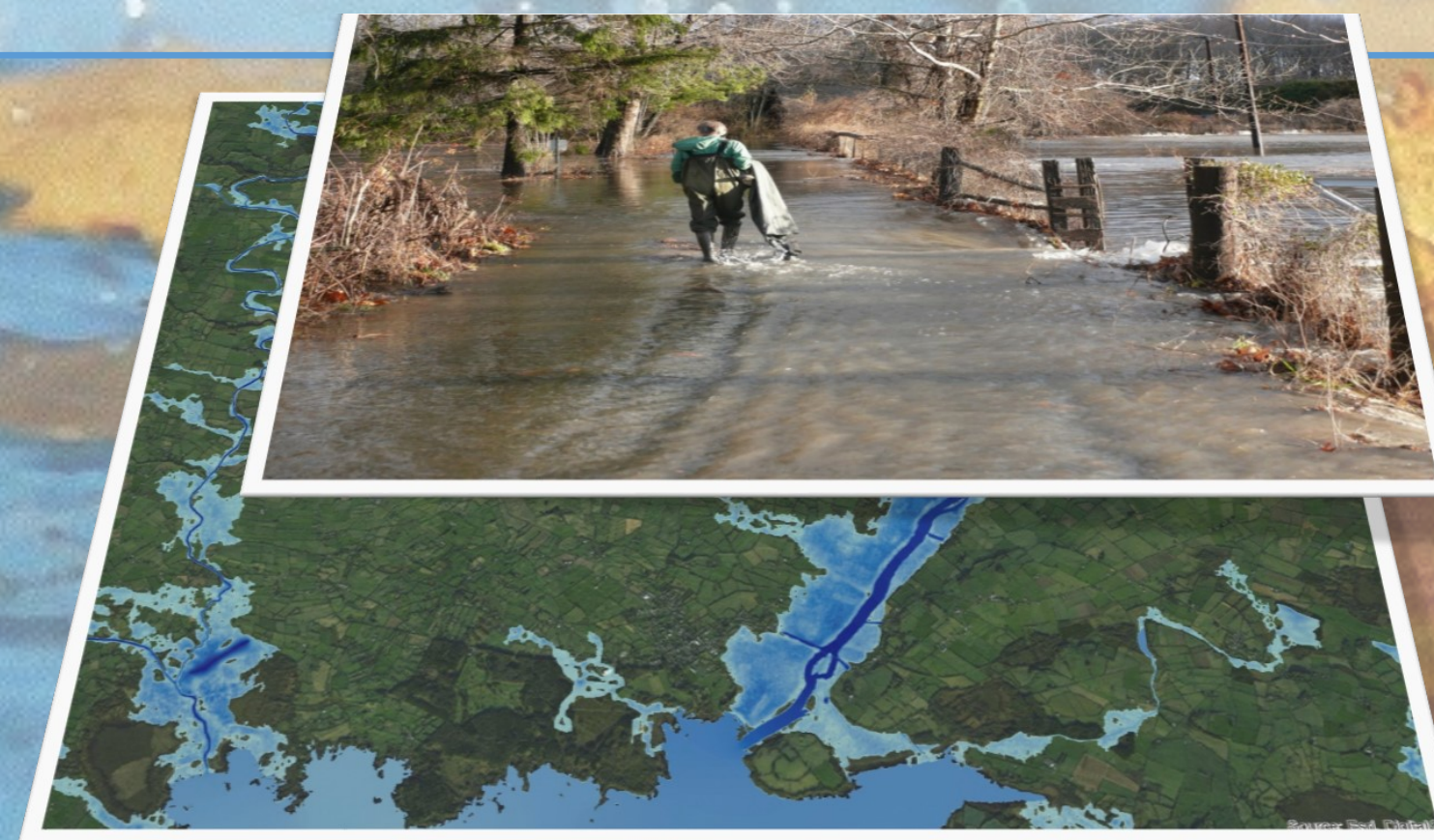


Figure 5: composite of images retrieved from: <https://www.ambientalrisk.com/ireland-floodmap/> and <http://www.taylorsfarm.org/about-us/history/taylor-river-side-farm-and-preserve-flood-history/> 23.01.19

Participatory

Using walking interviews, participatory mapping, participant analysis and evaluation to integrate local expertise throughout the project stages

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1. Dadson et al (2017); 2. Lane (2017); 3. Funtowicz & Ravetz (1993); 4. NCC (2018); 5. Ingold (2000); 6. Emery and Carrithers (2016); 7. Wynne (1996), Collins & Evans (2002), Lowe et al (1997); 8. Lavers & Charlesworth (2018), Short et al (2018) Bender, B. (2010). PLACE AND LANDSCAPE. In C. Tilley, W. Kearns, S. Kuechler-Figgott, M. Howlands, & P. Spyer (Eds.), *Handbook of Material Culture* (pp. 303–313). London: SAGE Publications; Broadmeadow, S., Thomas, H., & Nisbet, T. (2013). Midlands - Woodland for Water Project: Phase 1: Opportunity Mapping Final Report. Surrey: Dadson, S. J., Hall, J. W., Murgatroyd, A., Acreman, M., Bates, P., Beven, K., ... Wilby, R. (2017). A restatement of the natural science evidence concerning catchment-based ‘natural’ flood management in the UK. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Science*, 473(2199), 20160706. <https://doi.org/10.1098/rspa.2016.0706>; Ellison, D., Morris, C. E., Locatelli, B., Shell, D., Cohen, J., Muryarso, D., ... Sullivan, C. A. (2017). Trees, forests and water: Cool insights for a hot world. *Global Environmental Change*, 43, 51–61. <https://doi.org/10.1016/j.gloenvcha.2017.01.002>; Emery, S. B., & Carrithers, M. B. (2016). From lived experience to political representation: Rhetoric and landscape in the North York Moors. *Ethnography*, 17(3), 388–410. <https://doi.org/10.1177/1466138115609380>; Funtowicz, S. O., & Ravetz, J. R. (1993). SCIENCE FOR THE POST-NORMAL AGE. *Futures*. Retrieved from https://acels-cdn.com/001632879390022L/s2-0-001632879390022L-main.pdf?_id=341d7428-c888-11e7-9942-000000000000&acdnat=1510587478_c5a560be6765ab3cb9bde0ea3fba1479; Ingold, T. (2000). *The Perception of the Environment* (2nd ed.). e-Library: Routledge.; Lane, S. N. (2017). Natural flood management. *Wiley Interdisciplinary Reviews: Water*, 4(3), e1211. <https://doi.org/10.1002/wat2.1211>; Lavers, T., & Charlesworth, S. (2018). Opportunity mapping of natural flood management measures: a case study from the headwaters of the Warwickshire-Avon. *Environmental Science and Pollution Research*. <https://doi.org/10.1007/s11356-017-0418-z>; NCC. (2018). How to do it: a natural capital workbook (Version 1). Retrieved December 18, 2018, from <https://www.gov.uk/government/groups/natural-capital-committee>; Nisbet, T., Marington, S., Thomas, H., Broadmeadow, S., & Valentin, G. (2013). Slowing the Flow at Pickering, Phase II. *Defra FCERM Multi-Objective Flood Management Demonstration Project*, (April), 1–6.; Setten, G. (2004). The habitus, the rule and the moral landscape. *Cultural Geographies*, 11(4), 389–415. <https://doi.org/10.1191/147447400cug0309a>; Short, C., Clarke, L., Carrelli, F., Utley, C., & Smith, B. (2018). Capturing the multiple benefits associated with nature-based solutions: lessons from a natural flood management project in the Cotswolds, UK. *Land Degradation & Development*. <https://doi.org/10.1002/ldr.3205>; Stirling, A. (1990). Talking point. *Science*, 8(March), 93–98. <https://doi.org/10.1038/embor.2009.37>; Thomas, H., & Nisbet, T. R. (2007). An assessment of the impact of floodplain woodland on flood flows. *Water and Environment Journal*, 21(2), 114–126. <https://doi.org/10.1111/j.1747-6593.2006.00056.x>; Wheeler, R. (2017). Reconciling Windfarms with Rural Place Identity: Exploring Residents’ Attitudes to Existing Sites. *Sociologia Ruralis*, 57(1), 110–132. <https://doi.org/10.1111/sozu.12121>; Wynne, B. (1996). *May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide*. (B. Wynne, Ed.). Collins, H. M., & Evans, R. (2002). Third Wave of Science Studies: Studies of Expertise and Experience. *Social Studies of Science*, 32(2), 235–296. Lowe, P., Clark, J., Seymour, S., & Ward, N. (1997). *Moralizing the environment: countryside change, farming and pollution*. London: UCL Press Limited.; Wynne, B. (2006). Public engagement as a means of restoring public trust in science - Hitting the notes, but missing the music? In *Community Genetics*. <https://doi.org/10.1159/000092659>; Stilloe, J., Irwin, A., & Jones, K. (n.d.). The Received Wisdom Opening up expert advice. Background image from <https://www.setswall.com/leaves-wallpapers/leaves-water-drops-fallen-leaves-1920-x-1200/>