Wild nature reclaiming man-made landscapes

This article critiques the recent publication, Trees, Forested Landscapes and Grazing Animals: A European Perspective on Woodlands and Grazed Treescapes, *edited by Ian Rotherham. The book focuses on the effects of grazing on vegetation cover and openness, and looks at examples relating to Frans Vera's theory on grazing and original naturalness. Additional case studies presented in this article broaden the view of factors influencing grazing dynamics and woodland structure.*

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Artificial grazing for artificial conditions?

It has been nine years since I wrote about Frans Vera in these pages.[1] It wasn't particularly insightful to point out that it had only been a matter of time before his theories on grazing and vegetation dynamics would end up in a justification of agriculture in nature conservation. What I did not know then was that there is evidence as far back as the 1960s that the former Nature Conservancy had wrestled with the legitimacy of using livestock grazing, in particular sheep, in National Nature Reserves to maintain "large areas of unstable vegetation in a highly artificial condition".[2]

A number of reports were presented on grazing experiments during a symposium at the Monks Wood Experimental Station in 1965, leading one participant to remark that too much attention was devoted to studies on the rarities of chalk grassland, and that more work should be done on the common species. While the symposium consensus was that the target species in lowland reserves were more at threat from the absence of grazing, it was considered that overgrazing by sheep in Wales, Scotland and upland England had been responsible for changes in vegetation that many ecologists considered to be deleterious. Thus heavy grazing in those locations prevented the regeneration of trees and shrubs, while species that were sensitive to grazing (heather, cowberry, mountain avens) were eradicated as these communities were converted to grassland. In addition, a loss of productivity, especially on the poorer soils, was associated with a policy of continued heavy grazing with the result that soil erosion and scree formation was commonplace in Highland regions.

If there was an historical aspect to that symposium, then it was about referencing the agricultural period, and the associated economic considerations prevailing, that had similar land use under which a species of interest had thrived. There was no discussion about grazing and original naturalness other than an oblique reference in the notes to "natural grasslands", but without defining what these may be. In addition, the only reference to predators was in relation to their threatened existence in the uplands "as long as grouse, or even Red Deer, remain the chief interest". Perhaps no one at the symposium had knowledge of the publication

of Hairston, Smith and Slobodkin's 1960 paper which introduced the concept of trophic cascades and the essential role of carnivores in original naturalness, by arguing that predators reduce the abundance of herbivores, preventing them from depleting vegetation.[3]

Come forward 50 years and livestock grazing today is seen as a panacea in nature conservation circles in Britain, emboldened by the theories of Vera that the openness that this grazing maintains is the original naturalness that would have prevailed if humans had not depleted the wild herbivore guild. Thus while grazing as a conservation tool was about maintaining grassland areas so that targeted species could thrive, so-called naturalistic grazing is now predicated by Vera enthusiasts to shape the whole of landscape vegetation, including whether, where, and to what extent any woodland should exist.[4]

Vera is the central figure in the new book, edited by Ian Rotherham: *Trees, Forested Landscapes and Grazing Animals: A European Perspective on Woodlands and Grazed Treescapes*.[5] Such is the apparent aim and scope of the book that my dread was that it would be a paean of praise from an unquestioning fan club for Vera. That it has to some extent proved otherwise has been a relief. Even so, I have *carried* this book around for some time now, and in settings in which Vera's theories have little or no impingement, outside as they are of the narrow confines of discourse on wild nature in Britain. In these settings, wild nature is reclaiming man-made landscapes.

A future natural wilderness in Ireland

Vera's theories certainly had little presence at a conference on wilderness in a modified landscape, held in western Ireland in mid-May.[6] The conference took place near a state owned forestry plantation for which an audacious plan has been devised to develop a prototype wilderness. I walked Nephin Forest last year with Bill Murphy, Head of Recreation at Coillte, and who had been the driving force in bringing a team together to develop a definition for Irish wilderness and, in the process, make the case for Nephin Forest being designated its first wilderness.[7] Bill asked me to give the opening presentation and "explode a grenade" amongst the delegates, to get them thinking. As the first reaction of most people (including myself) is scepticism, I took the approach of teasing out the meanings of wild, natural and native. The writings of Richard Mabey are a useful mentor, and his excellent *Beechcombings* anchored a definition of naturalness as a process rather than a state, leading him to write "Naturalness is whatever occurs between human interventions".[8] Working through a selection of places, I judged each one for those three characteristics. To spare the blushes of readers, I invite you to view the presentation, rather than reveal the organisations responsible for the less wild or natural among the examples.

There were two factors that had been significant in overcoming my scepticism. Ireland has a state-owned protected area system of nature reserves and national parks in which there are fabulous ancient woodlands.[9] I walked six of those in nature reserves, as well as the extensive woodlands in Killarney National Park. I also walked native woodland in a Forest Recreation Area of Coillte, the state-owned

An area of windthrow in Nephin Forest showing mixed tree regeneration.
Photo: Mark Fisher

forestry company. All of those woodlands had a common factor of astonishing woodland interiors, showing evidence of a strong hyper-oceanic influence that results in ground layers lush with ferns, woodrush, Irish ivy etc. The trunks and branches of the trees, and every rock, had a thick clothing of mosses, liverworts and lichens, including the lungwort lichen. I also walked Guagán Barra Forest Park, a decommissioned Coillte plantation that completely fills an enclosed valley bowl of old red sandstone walls, and where Coillte have let the plantation trees grow on, while there is native tree regeneration at the upper margins.[10] The strong 'forest, rocks and torrents' feel of it reminded me of State Parks in the Front Range of the Rocky Mountains in Colorado, and it overcame my resistance to introduced tree species in a wilderness-like area. In essence, it is the falsity of trees growing in the enforced geometry of plantations that blocks our appreciation of these species. That geometry taken away and the local wild nature has moved in: the mosses, butterwort, St. Patrick's cabbage, otter, stoat, badger, and pine marten.[11]

These two factors also bear on Nephin Forest, and when coupled with a landscape-scale of over 40sqkm; that it encompasses bogs, lakes and rivers; and that there is evidence throughout of windthrow as well as both native and non-native tree regeneration (the latter starting out the process of naturalisation[12]) then all the elements for a wilderness exist. Once the initial restructuring phase is finished, the

forest will be left to its own devices without any management intervention, so that I expect deer, otter, pine marten and other wild creatures will make good use of the opportunities opened up, its rivers already important for salmon spawning. I resisted contrasting the approach at Wild Nephin with that in England, where public forest lands have become the playground for Vera-like experiments in wood pasture creation.[13] Why would I have wanted to confuse what was a good news Irish story, nor spoil the goodwill that Wild Nephin engendered in all who were there?

Wilderness destroyed, and reclaimed

A few weeks later, I was walking the Bear Rocks trail in the northern section of Dolly Sods Wilderness, located in the Monongahela National Forest of the Allegheny Mountains of eastern West Virginia. It is an unusual place, even for the Alleghenies, but I am sure it would be admired by enthusiasts for the British uplands, who would marvel at its apparent wildness and diversity. Designated a wilderness as recently as 2009, this section of 7,156 acres contributes about 40% of the overall area of Dolly Sods. It is a mountaintop flat at an average elevation of about 4,000ft, with a mostly open meadow-like ("sods") landscape of grass bolds, heath barren/huckleberry plain, and rocky boulder fields, that affords an endless variety of long vistas, something you don't expect in wilderness at this elevation.[14] The red spruce that dot the flat show Krummholz effects (branches grow mostly on the down-wind side of the tree) and snow skirts (snow cover protects lower branches from the wind). In addition, there are small areas of deciduous hardwood forest in wetter areas, sheltered by the topography. The prevailing winds were from the west and blew almost constantly. This, coupled with snowfall that may reach 150 inches a year, and rainfall of 55 inches, makes it a tough landscape.[15] It thus has a tundra-like windswept appearance, where the most successful vegetation cover is the carpet of low shrubbery: blueberry, cranberry and huckleberry, as well as dotted with larger shrubs of rose azalea, rosebay rhododendron, mountain laurel, teaberry, and false huckleberry. Some small trees get away, such as chokeberry, mountain ash, serviceberry, and pin cherry.

It does look 'real' in a tree-line boreal landscape context with this dwarf shrub cover, and especially when you see the wind and snow shaping of the spruce. However, I stopped to chat to another hiker who told me: "it's a man-made landscape – give it another 100 years, and the red spruce will reclaim it all".

Extensive areas in Dolly Sods are known in the mid-eighteenth century to have been covered by dense, old-growth (ancient) red spruce and eastern hemlock forest, with some trees measured at 12 feet in diameter.[15] An area of open land was, however, visible from Bear Rocks, as revealed in a diary entry from a surveying expedition in 1746, but there is anecdotal evidence that areas of the Sods were burned over by Native Americans.[16]

The greatest disturbance to the Sods came when logging started in the 1830s, and accelerated with the penetration of railroads on to the plateau in the late 1880s.[14] This was happening everywhere in Alleghenies forests. By 1910, 90% of West Virginia's old growth forest was gone. The 7 to 9 feet deep layer of humus that covered the

forest floor on Dolly Sods dried out once the protective tree cover was removed, and became vulnerable to ignition by sparks from the locomotives, saw mills and the loggers' warming fires.[14,15] Fires ravaged the area, burning everything down to the rocks underneath, and exterminating all the burrowing animals.[17] After the loggers had completely cut over Dolly Sods and moved on, the entire area was open range for grazing sheep and cattle, and which kept the Sods in an open condition.

The loss of tree cover from the West Virginia hillsides meant that rainwater could no longer be stopped from rushing down the mountains, and causing extensive flooding. In March 1907, a disastrous flood in the Monongahela basin caused by heavy rain and rapid snow melt led to a rise of 35 feet in water level 150 miles downstream in Pittsburgh, the loss of nine lives, and great damage to property.[18] It was events like that which led to the Weeks Act being signed into law in 1911 by President Taft, permitting the federal government to purchase private land in order to protect the headwaters of rivers and watersheds in the eastern United States by establishing national forests.[19] In the case of Dolly Sods, it is likely that a higher water table resulted from the loss of tree cover, expanding the area of bogs and other wetlands, and bringing about an acidification in the water saturated soils due to the lack of calcium being brought up from below.[20] This, plus the climatic exposure, created the conditions for the heath barrens to thrive and spread out over the landscape.

Livestock grazing of Dolly Sods was finally removed in the late 1970s and while there are white tail deer today (and black bear, lynx and beaver) an ecological restoration, entirely independent of human intervention, is expected to take place based on observations from the mid-1960s onwards that the ravages of the logging at the turn of the last century are healing as red spruce and balsam firs come back, although some scars on the landscape may last many years.[21,22] Much of the heath barrens will be lost in a parallel here to the subsuming of man-made lowland heathland by birch, albeit that the climatic factors at elevation are making it tough going for that restoration of spruce and other forest. The southern section of Dolly Sods wilderness already has much greater tree cover (designated in 1975 – amongst the first of the eastern USA wilderness areas) and so there are many stages of ecological succession in the Sods that make it fascinating from a restoration perspective. I doubt, though, that my fellow rambler informant, nor any of the many people who study the ecology of Dolly Sods, such as Virginians for Wilderness and its Forests of the Central Appalachians Project[23] and the West Virginia Wilderness Coalition[24],have ever heard of Frans Vera, and neither would they see much relevance for his theories.

A European perspective on woodlands and grazed treescapes

Such is the ambitious subtitle of Ian Rotherham's book, and which would be hard to live up to, if it had only contained contributions that were uncritical of Vera's theories. It is certainly less ambitious than the title of the 2011 Sheffield conference on which much of the contents of the book are based[25] and which has already seen publication elsewhere.[26] Rotherham himself is an enthusiast for Vera. In his introductory chapter on reinterpreting wooded landscapes, and his concluding

Bear Rocks trail heading west in Dolly Sods wilderness

Photo: Mark Fisher

chapter, Rotherham refers to his search for shadow woodlands, the islands of ancient, worked woodland he has discovered in the English Midlands that he sees as consistent with Vera's theories. He spins many scenarios that elide the history of wood pastures and park landscapes with what he thinks was the original naturalness in Europe as envisaged by Vera, pressing, as do many other pro-Vera contributors, the distinctiveness of trees grown in open landscapes (open-grown trees) and even considering chalk grasslands as an open landscape of the original naturalness. Ted Green, in his chapter on ancient trees and wood-pastures, doesn't even want to waste time "defending Vera with the sceptics". As befits his founding membership of the Ancient Tree Forum, Green extols the virtues of open-grown trees, asserting that bird and rodent assisted tree seed disposal is supportive of Vera. (Green's propensity to use the name Celtic maple instead of sycamore, but without explanation, gets another airing). The repetition that grazing has been overlooked in the maintenance of open-grown trees runs through Keith Alexander's chapter on the conservation of dead wood and wood decay invertebrates. He admits though that there is a scarcity of knowledge on how saproxylic beetle assemblages of these open-grown trees are able to redistribute, suggesting to me that these assemblages may be an artefact of cultural landscapes, much the same as the coppicing plants of Rackham.[27]

Keith Kirby, with Ambroise Baker, errs on the side of more wooded than open, and a significance for edaphic and climatic factors alongside grazing, in his chapter

on the dynamics of pre-Neolithic landscapes, but even though he has now retired from Natural England, he still feels it necessary to at least explain what is needed to maintain the status quo in mainstream conservation. The late Derek Yalden, in his chapter on the post-glacial history of grazing, assesses the likely impact of returning herbivores, judging that Irish Elk were killed off by a short return to glacial conditions in the Younger Dryas, but giving no opinion as to the cause of the loss of megafauna like the woolly mammoth other than that they fetched up in Siberia as the Younger Dryas came to an abrupt end. Yalden finds the absence of bison in most parts of western Europe surprising, but then he says it fits with his general assertion that climate and consequent vegetation determined the fauna, probably both its diversity and its abundance. He allows that aurochs had a significant presence, but questions whether they were sufficiently numerous to drive Vera's woodland-grassland cycle. Yalden is one of the few contributors to this book that implicates the role of carnivores in influencing herbivore pressure.

There is certainly no mention of trophic cascades or the influence of carnivores in Frans Vera's chapter, just the assertion that high canopy forest only ever existed in the post-glacial period when it developed on "abandoned land" after the extermination of aurochs and tarpan (wild horses) and that domestic livestock and the wood pasture systems (presumably created by humans through felling and thinning of this dense woodland, but he doesn't say) were a replacement for this loss of the original naturalness that was driven by those exterminated species. Vera believes the impact of these two wild herbivores has been underestimated because their numbers exerting pressure on the original naturalness are underestimated by the assumption of a closed forest landscape. He labels this as circular reasoning, and he would have a point if he could back up this and any of his other assertions. I have kept a record of mostly peer-reviewed literature published since his book first came out, and it is overwhelmingly unsupportive of any of Vera's theories.[13]

Oliver Rackham is perhaps mindful of how totemic his views are regarded, and thus he eschews arbitrating in his chapter on woodland and wood pasture, between closed canopy woodland as the original naturalness, compared to the savannah-like mosaic of shifting areas of grassland and trees of Vera. He ventures that the weight of pollen-analytical opinion is against Vera, but (gloomily, for me) asserts that his theory is unlikely to disappear. It is, anyway, not necessary to set up opposites of wood pasture and high canopy woodland, like Vera consistently does, between which we all then attempt to mediate. I think everyone has moved on from such a simplistic approach, including pollen interpretations that perhaps must be seen alongside other evidence from modern ecology. Thus to pollen data can be added beetle data, fungal spore occurrences, as well as evidence of the indicative distribution of fossil remains of beaver, bear, wolf, aurochs and early domesticated cattle, all telling us something about landscapes prior to and after significant human intervention.

The increasing complexity being revealed with each new set of data should not be a surprise in itself, but while it hasn't lent any persuasive support for Vera, it hasn't yet delivered a knock-out blow either, as is shown by the chapter by Helen Shaw and Ian Whyte on the paeloecological records of woodlands. I would recommend Richard

Gulliver's chapter on Refuge Habitats, inaccessible to grazing, their importance for maintaining native species and for their potential for recolonising adjacent landscapes with woody and tall-herb communities when grazing is removed. There is also an important message about the threat to agro-silvopastoral woodlands in the Mediterranean region from over-grazing in the chapter from Tobias Plieninger and others, as they record that the regeneration of evergreen oak is just not happening with the level of grazing experienced over the last few years - Rewilding Europe, an arch follower of Vera's grazing theories, and with "rewilding" projects on the Dehesas and Montado in Spain and Portugal, take note![28] It is, however, the chapter by Adrian Newton and colleagues about the influence of grazing animals on tree regeneration and woodland dynamics in the New Forest, as well as Tomasz Samojlik and Dries Kuijper's chapter on the impact of wild ungulates on the Białowie a Primeval Forest, that raise many questions about the theories of Vera, and which bring a much needed balance to those of the Vera enthusiasts.

Ian Rotherham's book sets out with the aim of bringing to a much wider audience the current discussions and the latest research on the types of anciently grazed landscapes in Europe, and what they tell us about past and present ecology. While there is an admission of controversy in this approach, I would suggest that the absence of robust evidence in the book (and elsewhere) can not be replaced by inference alone, the latter requiring a leap of faith to convert historical knowledge of cultural landscapes into a proof of Vera's theories.

References

1. Fisher, M. (2004) Wild follow up. *ECOS* 25 (1) 21-22
2. Wells, T.C.E. (Ed.) (1965) Grazing Experiments and the Use of Grazing as a Conservation Tool. Symposium No 2 April 6-7h. The Nature Conservancy, Monks Wood Experimental Station, Institute of Terrestrial Ecology http://nora.nerc.ac.uk/7091/1/Symp_02.pdf
3. Hairston NG, Smith FE, Slobodkin LB (1960) Community structure, population control and competition. *American Naturalist* 94, 421-425 http://www.esf.edu/efb/parry/Insect%20Ecology%20Reading/Hairston_etal_1960.pdf
4. Rewilding Europe (2011) Forest growth and regrowth. Main Guiding Principles www.rewildingeurope.com/assets/uploads/Downloads/Guiding-principles-of-Rewilding-Europe-0811.pdf
5. Rotherham, I.D. (Ed.) (2013) *Trees, Forested Landscapes and Grazing Animals: A European Perspective on Woodlands and Grazed Treescapes*. Routledge. 384 pages. Hbk. £65.00 ISBN 978-0415626118
6. Wilderness in a modified European landscape. Coillte National Parks & Wildlife Service, and Mayo Council Council, 15th & 16th May 2013, Westport, Co Mayo, Ireland www.coillte.ie/wildernessinmayo/
7. Fisher, M. (2012) Wild Nephin – future natural wilderness in Ireland. Self-willed land, 22 August 2012 www.self-willed-land.org.uk/articles/wild_nephin.htm
8. Mabey, R. (2007) *Beechcombings: The narrative of trees*. Chatto and Windus
9. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland http://www.npws.ie/
10. Guagan Barra Forest Park, Coillte Outdoors http://www.coillteoutdoors.ie/index.php?id=53&rec_site=88&no_cache=1
11. Fensome, R (2012) Gougane Forest Park. Uibh Laoire Parish, 26 November 2012 http://uibhlaoireparish.com/index.php/item-2/gougane-barra/forest-park
12. Carle, J. & Holmgren, P. (2003) Definitions Related to Planted Forests. Working Paper 79. Forestry Department, Food and Agriculture Organization of the United Nations ftp://ftp.fao.org/docrep/fao/007/ae347e/ae347e00.pdf
13. Fisher, M (2012) A review of naturalistic grazing versus natural processes. 11th Europe's Wilderness Days, 26- 28 September 2012, Archipelago National Park, Nagu/Nauvo, Finland http://www.slideshare.net/panparks/mark-fisher-a-review-of-naturalistic-grazing-versus-natural-processes
14. Rentch, J. Dolly Sods—A Brief Introduction. West Virginia University Division of Forestry and Natural Resources http://www.gloucesterva.info/Portals/0/mg/documents/HelpDesk/GardenSheets/DollySods.pdf

15. Burk, C. Dolly Sods Wilderness: A wilderness that resembles Canada more than the lower 48. *Outdoor Travels* http://www.outdoortravels.com/Hiking_WV_Overview_Dollysods.html
16. Lesser, W. (2010) Some natural history of Dolly Sods. Highlands Voice, West Virginia Highlands Conservancy 5 February 2010 http://wvhighlands.org/wv_voice/?p=2364
17. Cobb, K. (2009) Dolly Sods still needs to be respected. *The Inter-Mountain* 30 May 2009 http://www.theintermountain.com/page/content.detail/id/519104/Dolly-Sods-still-needs-to-be-respected.html?nav=22
18. Glenn, L.C. (1911) Denudation and erosion in the southern Appalachian region and the Monongahela Basin. U.S. *Geological Survey Professional Paper*: 72 http://pubs.usgs.gov/pp/0072/report.pdf
19. Passing the Weeks Act, U.S. Forest Service History, The Forest History Society http://www.foresthistory.org/ASPNET/Policy/WeeksAct/PassingAct.aspx
20. Mueller, R.F. Forest Succession and Secular Change, The Forest— An Overview. Forests of the Central Appalachians Project http://www.asecular.com/forests/forestchapter.htm
21. Sundquist, B. (2009) The end game for the Sods and the Plains as we know them. Highlands Voice, West Virginia Highlands Conservancy, 7 December 2009 http://wvhighlands.org/wv_voice/?p=2191
22. Beetham Jr, G.E. (2010) Wilderness destroyed, and reclaimed. *Highlands Voice*, West Virginia Highlands Conservancy, 6 September 2010 http://wvhighlands.org/wv_voice/?p=3042
23. Forests of the Central Appalachians Project: Inventories to Protect. Virginians For Wilderness http://www.asecular.com/forests/
24. West Virginia Wilderness Coalition http://www.wvwild.org/
25. Animals, Man and Treescapes: The interactions between grazing animals, people and wooded landscapes http://www.kentbap.org.uk/images/uploads/AMT_flier_v5_14th-16th_Sept2011.pdf
26. Animals, Man and Treescapes: The interactions between grazing animals, people and wooded landscapes. *Landscape Archaeology and Ecology Review*, Volume 9, 2011. Edited by Ian D. Rotherham and Christine Handley http://www.wildtrackpublishing.co.uk/?slug=product_info.php&products_id=42
27. Rackham, O. (2006) *Woodlands*. Collins New Naturalist Library (100)
28. Rewilding Europe. Western Iberia http://www.rewildingeurope.com/areas/western-iberia/conservation-setting/

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