

Online Research @ Cardiff

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <https://orca.cardiff.ac.uk/id/eprint/74006/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Prior, Jonathan ORCID: <https://orcid.org/0000-0001-7081-8025> and Brady, Emily 2017. Environmental aesthetics and rewilding. *Environmental Values* 26 (1) , pp. 31-51. 10.3197/096327117X14809634978519 file

Publishers page: <http://dx.doi.org/10.3197/096327117X14809634978519>
<<http://dx.doi.org/10.3197/096327117X14809634978519>>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies.

See

<http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



This is a pre-copy-editing, author-produced PDF of an article accepted following peer review for publication in *Environmental Values*.

Environmental Aesthetics and Rewilding

1. INTRODUCTION

Bound up with shifting environmental policy agendas and priorities, rewilding has emerged as a distinctive form of ecological restoration. This emergence has been reflected upon within the environmental conservation literature (for example see Donlan *et al.*, 2005; Foreman, 2004; Fuhlendorf *et al.*, 2008; Taylor, 2005), and, as we shall later detail, the social sciences and humanities, though to a lesser extent.¹ Across all of these disciplines, much of this work at least tangentially touches upon questions pertinent to the concerns of environmental philosophy; nonetheless, we believe that this emergence has interesting and significant implications that have not yet been directly addressed by environmental philosophers.

In this paper, we focus in on just one of these: the implications of rewilding practices for environmental aesthetic values, qualities, and experiences, from both a theoretical and practical perspective. Environmental philosophers have previously investigated ecological restoration values, though this has been in relation to restoration strategies broader than the specifics of rewilding. Notably, the majority have focused their efforts on considering the types of social and ecological values that are either gained or lost when ecological restoration is undertaken (see for

¹ Rewilding has also caught the imagination of popular environmental writers; for an example from the UK see Monbiot (2013).

example Aronson *et al.*, 2007; Brook, 2006; Elliot, 1997; Higgs, 2003; Jordan III, 2003; Katz, 2000; Light, 2000; Merchant, 1991).

Those studies that have reflected specifically upon the relationship between aesthetic values and ecological restoration, have done so firstly by analysing people's (visual) aesthetic preferences for different post-restoration landscapes (Hands and Brown, 2002; Junker and Buchecker, 2008); secondly by examining the role of artistic representations of ecosystems on restoration practices (Sayre, 2010); and thirdly by exploring the potential for conflict between aesthetic values and other types of value, such as ecological values (Gobster, 1997; 2000), social justice values (Foster, 2005), and environmental preservationist values (Lee, 1995). Further, there has been some commentary on how practices of ecological restoration can be conceptualised as an artistic practice - either as something akin to land art or performance art (Brigham, 1993; Jordan III, 2003; Murray, 1991). Such a direct projection of aesthetic values has been interpreted by some as a positive or even necessary constituent of 'good' ecological restoration practice (Turner, 1990), while others are disparaging of ecological restoration that is apparently more 'art' than 'science' and is therefore not carried out 'in a proper scientific way' (Diggelen *et al.*, 2001: 115).

These reflections have, so far, not accounted for how different types of aesthetic values may inform ecological restoration projects, nor the types of aesthetic qualities and characters that in turn arise from restoration practices, let alone in the specific context of rewilding. We do not wish to suggest here that aesthetic values have been disregarded altogether, but that they are most often only invoked in an un-reflexive manner. Given the significance attributed to aesthetic values in environmental decision-making (see for example Brady, 2003; Callicott, 1994; Hargrove, 2008; Lintott, 2006; Porteous, 1996), we think it is important to address this gap.

In this paper, then, we explore rewilding as a specific form of ecological restoration, and its particular aesthetic features. First, we consider the temporal dimensions of rewilding in regards to the emergence of particular aesthetic qualities over time, and our aesthetic experience and appreciation of such qualities. For instance, we address questions rewilding raises about what we call ‘future aesthetics’, and the role of imagination in the unfolding aesthetic narrative of rewilded places. Second, we discuss how rewilding potentially brings about difficult aesthetic experiences – such as the unscenic and the ugly – that tend not to be found in other kinds of ecological restoration projects.

Finally, and more generally in the paper, we hope to make progress in critically understanding how rewilding may be understood as a distinctive form of ecological restoration, while resisting the assimilation of rewilding into wilderness discourses. We do so not from a perspective of supporting rewilding, but from one that acknowledges that rewilding is increasingly finding purchase within academic and environmental policy circles, and is now being widely discussed in the popular press. Indeed, throughout the paper we are not attempting to argue in favour of rewilding, and nor are we attempting to argue against; our interest lies instead with exploring the likely aesthetic implications of this emerging ecological restoration strategy.

Before we turn to address these questions, we will first explore how rewilding has been defined and conceptually treated within the literature, which will in turn allow us to point to the particularity of rewilded aesthetics.

2. ON THE MEANING OF ‘REWILDING’

There is no agreed-upon definition of rewilding, yet we can detect a few trends in how the term has been applied. Within the environmental conservation literature, by far the predominant focus of rewilding has been on the reintroduction of wild mammalian species, including wolves, lynx, and bison, or the restoration-via-reintroduction of charismatic Pleistocene megafauna in North America, or at least extant species descended from such animals, including elephants and camels.² While it appears that Pleistocene rewilding has remained on the relative margins of actual conservation strategies, it has nevertheless caused considerable debate across journal articles and letters in regard to both its feasibility and desirability (e.g. Caro, 2007; Huynh, 2010; Martin, 2005; Oliveira-Santos and Fernandez, 2009; Smith, 2005; Stolzenburg, 2006; and Wolverton, 2010).³

Much of this literature uses Soulé and Noss' landmark paper from 1998 as a starting point for discussions of rewilding practices. In their paper, the authors focus on making a scientific case for the need to reintroduce top carnivores into North America:

Our principal premise is that rewilding is a critical step in restoring self-regulating land communities....Once large predators are restored, many if not most of the other keystone and “habitat-creating” species (e.g., beavers, prairie dogs)...and natural regimes of disturbance and other processes will recover on their own.

(Soulé and Noss, 1998: 6-7)

² As an important aside on this point, it should be noted that there have been recent calls to use advanced genetic techniques to bring extinct organisms back to life – a process termed ‘de-extinction’ (Seddon, 2014). While this has yet to be reflected broadly within the academic literature, a few conservation biologists have spoken in favour of de-extinction through popular media reporting (see: <http://longnow.org/revive/>).

³ Though see the example of Pleistocene Park in northern Siberia <http://www.pleistocenepark.ru/en/>

Thus, this formulation of rewilding emphasises the top-down role of predator species in precipitating wider ecological changes, or so-called ecological cascading effects (Cromsigt and te Beest, 2014). Other formulations of rewilding have not solely focused on the reintroduction of wild mammalian species, but also the ‘de-domestication’ of domesticated animals, particularly ungulates (Gamborg *et al.*, 2010; Klaver *et al.*, 2002), and also the restoration or reintroduction of wild floral species. While it is assumed that such flora will serve as habitat for other species, value is often directly placed on the wild qualities of the plants themselves; we shall provide a detailed example of one such rewilding project later in the paper.

Some proponents of rewilding have also focused in on the importance of restoring certain abiotic factors to ecosystems, rather than assuming that the reintroduction of top carnivores, herbivores, or ecosystem engineers, such as beavers, will lead to the recovery of ecological processes. So, for example, the reintroduction of fire regimes in grasslands, and the removal of dams and other ‘hard engineering’ river management practices, have been subsumed under rewilding (Fuhlendorf *et al.*, 2008; Hawley, 2011). By extension, we think that managed retreat, whereby coastal flood defences are removed, qualifies as this type of rewilding action.

As a result of the broad scope of what constitutes ‘rewilding’, throughout this paper we understand it to be a process of (re)introducing or restoring wild organisms and/or ecological processes to ecosystems where such organisms and processes are either missing or are ‘dysfunctional’.⁴ For the sake of clarity, a few caveats are necessary to refine this definition. Firstly, in some of the literature concerning rewilding practices we see the unfortunate conflation of ‘wilderness’ with ‘wildness’ (see for example Arts, *et al.*, 2012; Bauer *et al.*, 2009; Foreman, 2004; Soulé and Noss, 1998). This means that many of the familiar criticisms of wilderness can

⁴ See Sandom *et al.* (2013) on dysfunctionality and rewilding.

be levelled at rewilding, and indeed have been (see the exchange between Hintz (2007a; 2007b) and Woods (2007)). In this paper, however, we want to make it explicit from the outset that, while there are many instances where ‘wildness’ can be identified as a component of ‘wilderness’ objectives (Cole, 2000), we do not *equate* the former with the latter.

Instead, we follow Robert Chapman’s rejection of the interchangeability of these two terms (Chapman 2004; 2006). Whereas ‘wilderness’ is a quantitative spatial dimension that ‘can be reduced acre-by-acre’ (Chapman, 2006: 471), in which human bodies and their material traces are (often made) absent, wildness can be understood ‘as the autonomy of the more-than-human world where events such as animals moving about, plants growing, and rocks falling occur largely because of their own internal self-expression’ (Woods, 2005: 177). Leaving aside rocks, the ability to self-direct and self-sustain – and so not rely on direct human control for flourishing – are key qualities of this autonomy (Gamborg *et al.*, 2010; see also Drenthen, 2005: 328).

It follows then that we understand that wildness is to be found in humanly populated and cultural landscapes, and experienced at a range of spatial scales ‘from gazing at a starry night sky to watching spiders and ants at work in a suburban back yard’ (Mulligan, 2001: 27). Thus, rewilding as a specific form of ecological restoration does not require human abandonment or erasure of cultural landscapes, unlike wilderness management. It therefore seems appropriate to think of ‘rewilding’ as a relational - rather than binary - category, which can be implemented at a range of scales and at different intensities, and so not always and only homogeneously across the totality of a given landscape.

One of the most prominent examples of rewilding in Western Europe, the Oostvaardersplassen reserve in the Netherlands, where the de-domestication of cattle and ponies is taking place, makes this point for us. This landscape, initially reclaimed from the sea in 1968

for the purposes of industrial development, ‘offers a space for wildness without the impossible geography of wilderness’ (Lorimer and Driessen, 2013; 178).⁵ The targeted reintroduction of short-haired bumblebees (*Bombus subterraneus*) in tandem with the creation of new flower-rich habitats, at Dungeness, Kent,⁶ a place that effortlessly and endlessly undermines any attempts at parsing the ‘natural’ from the ‘cultural’,⁷ is just one recent example of rewilding in a nature-culture landscape from the United Kingdom. While some may find the reintroduction of a single, non-mammalian species, as too piecemeal to be understood as ‘rewilding’, we cannot see any justifiable reason to discount such projects; a wild organism has been reintroduced to an ecosystem where it had previously gone extinct.

We also consider rewilding to encompass projects in which certain direct human actions occur, for example when humans intentionally reintroduce locally rare or extinct species through translocation – as with the short-haired bumblebees introduced from Sweden – or when animals are de-domesticated.⁸ Nonetheless, the *quality*, *intensity* and *timing* of these actions should be noted. While other forms of ecological restoration are brought about but also sustained through direct human stewardship (see Gross, 2003; Sandlos, 2005; Turner, 1994), rewilding rejects continuous direct human management of rewilded subjects, instead placing emphasis on the role of self-regulation within and amongst non-human species and ecological processes.

⁵ In a review of George Monbiot’s *Feral*, a popular and positive account of rewilding, Ned Hettinger neatly summarizes the distinction: ‘the result [of rewilding] is not wilderness ecosystems, but self-willed areas, governed not by human managers, but by nature’s own processes’ (Hettinger, 2014: 362).

⁶ The re-introduced bumblebees are not being directly managed, meaning that it has been necessary for restorationists to re-introduce them over successive years. It is now hoped that the bumblebee ‘is on the way to become a self-supporting wild species in the UK’ (<http://www.bbc.co.uk/news/uk-england-kent-24112752>)

⁷ Dungeness is as much a landscape of gravel extraction, nuclear power production, World War II-era concrete aircraft ‘listening ears’, and a filmic backdrop (most notably in Derek Jarman’s *The Garden*), in both its material configuration and popular cultural imagination, as it is an important site for a range of different floral and faunal species.

⁸ It should be noted at this juncture that, while in this paper we will concentrate on restoration practices where wildness is a desired outcome of human actions (explicit rewilding), there are examples where wildness may unwittingly emerge (spontaneous rewilding).

Such an emphasis has led Peter Taylor to conceptualize rewilding as a paradigmatic shift in conservation that sets a challenge for conservationists to ‘eschew management...and allow [non-human] nature to lead the way in some areas at least’ (Taylor, 2005: 5), echoing in sentiment critical stances toward the (over)management and regulation of non-human nature (see Bavington, 2005). Thus, rewilding projects can – and often are – initiated by human actors, but the intention is to reduce the level of direct control over rewilded species or ecological assemblages, and allow ‘ecological and evolutionary processes to reassert themselves’ (Klyza, 2001: 285), so that the ‘autonomy’ of wild nature becomes a focus of restoration (Woods, 2005: 176).⁹

Having now set out the broad terrain of the meanings of rewilding, we will now move on to consider some specific features of rewilding practices, and the types of aesthetic qualities that are likely to arise from these.

3. TEMPORALITY, IMAGINATION, AND THE UNMANAGED AESTHETIC QUALITIES OF REWILDING

The temporal dimensions of nature and culture are central to discussions about ecological restoration practices – perhaps more so than other forms of conservation practice. To get a sense of this, we need only look to how ecological restoration is defined, which, in almost every case, focuses on the recuperation or recovery of a *historical* landscape or ecosystem state temporally located before a human-induced form of degradation or disturbance has occurred (see for example Morrison, 1987: 160; SER, 2004: 12; Throop, 2000: 11). Here, emphasis is placed on

⁹ If this appears to take us back full-circle to wilderness, it should be noted that rewilding does not preclude other forms of human-environment interactions (only those that seek to continuously manage or regulate rewilded subjects) that ‘wilderness’ tends to.

reconfiguring contemporary landscapes so that they express certain qualities (ecological health, species diversity, and so on) that are judged to be authentic in their fidelity to what has gone before.

Concurrently, in this age of what has come to be known as ‘new’ or ‘non-equilibrium’ ecology, which rejects the notion that ecosystems or landscapes develop in linear, stable and predictable ways through time (see Scoones, 1999), the ability to replicate a historical state has been questioned (Allen *et al.*, 2002; Jentsch, 2007), particularly when future climate change scenarios are taken into account (see Harris *et al.* 2006). This has meant that, in some instances, the temporal orientation of ecological restoration theory has begun to change. Here, we are seeing a shift from restoration that is rigidly historically-aligned, to restoration that is at least partly future-orientated (Choi, 2004) so as to capture ‘desired characteristics for the system *in the future*’ (Hobbs and Harris, 2001: 241; emphasis in original). While, as we shall see, non-rewilding restoration practitioners and theorists often frame any such unpredictability or ‘ecosystemic uncertainty’ (Scoones, 1999) as a ‘problem’ that needs to be addressed, rewilders attempting to restore non-human autonomy must necessarily embrace such uncertainty. This presents an interesting set of aesthetic challenges.

To consider these challenges, we focus on the Carrifran Wildwood restoration project, which is being undertaken across a 640-hectare valley in the Moffat Hills of southern Scotland. A former sheep grazing valley, since 2000 it has been owned by Borders Forest Trust, an environmental charity involved in woodland restoration projects throughout southern Scotland. A project to rewild the valley has been initiated by a grassroots voluntary grouping within the Borders Forest Trust called the Wildwood Group. The stated objective of the project is to ‘recreate an extensive tract of wild and largely wooded land, evoking the pristine countryside of

6,000 years ago’ (Ashmole and Ashmole, 2009: 6),¹⁰ and to this end over half a million trees and shrubs have been planted that are deemed native to the valley at this particular time and place, including rowan, birch, alder, hazel and sessile oak (Matthews, 2009: 146). The woodland is not going to be used for commercial reasons; instead it is going to remain publicly accessible to act ‘as an inspiration and an educational resource’ for future generations.¹¹

This is a clear invocation of a very distant past, based on aesthetic-ethical value claims over the ‘correctness’ of a particular landscape state (see Prior, 2012); a distant past that has been reanimated through peat sampling and pollen grain analyses (Ashmole and Tipping, 2009), as well as a bio-cultural narrative of pre-agricultural humans moving through and hunting – but not settling – in the landscape (see Martynoga, 2009: 58). Through such an invocation, the Group are clearly placing value on historical authenticity – a type of temporal value that is shared with restorations that are not explicitly rewilding projects. However, value is also placed on deep *future* time, in the sense that the Group seek a shift towards autonomous non-human qualities within the valley, while acknowledging that this shift will be gradual across a long human timescale. Indeed, the Group expects that Carrifran Wildwood will not be a mature woodland ecosystem ‘for several centuries’ (Ashmole and Ashmole, 2009: 204). We can actually go so far as to say that desired future wild qualities are valued to such an extent that they may undermine historical authenticity:

We have no fixed view on what the structure and composition...of the woodland will be in the long term, as a key objective is to allow natural processes to predominate...the

¹⁰ While we don’t have space to deconstruct this, we want to note that we are aware of the problematic nature of invoking ‘pristine countryside’ (see Prior (2012) for what this means in the context of Carrifran Wildwood).

¹¹ For more background detail, see Ashmole and Ashmole (2009), and the project’s website: <http://www.carrifran.org.uk/>

woodland may ultimately be of lower floristic and structural diversity than that established initially.

(Wildwood Group, 2000: 26-27)

This poses a challenging temporal scale for aesthetic appreciation - importantly not only for those directly involved in the project. Firstly, present generations of aesthetic appreciators will not be able to perceive the ‘final’ results of the restoration project.¹² Indeed, intergenerational stretches of time will be required to comprehend the fullness of the restoration. Secondly and relatedly, it may be very difficult to preserve the original ethical-aesthetic objective of a wild woodland across multiple generations. Future generations may well have divergent ideas about how to utilise woodland resources or the composition of cultural and natural subjects and objects within the valley, which is acknowledged by the Group when they state that future generations who manage the site may tolerate the presence of non-native tree species (Wildwood Group, 2000: 27).

Compositional and structural uncertainty about what may develop in the distant future, and how future generations may manage (or not) the site, is compounded by the Group’s approach to post-restoration management. Due to reasons of climate, soil, herbivore pressure, and lack of existing tree cover, the Group decided that ‘natural regeneration’ – while being a preferable means of woodland regeneration – was not ‘...practical over most of the valley’ (Wildwood Group, 2000: 53). This meant that direct tree planting and minimal indirect forms of tree management were deemed necessary, including the limited use of tree shelters, and a perimeter fence along the valley’s summit to prevent grazing herbivores from entering the site during the

¹² While the woodland will constantly undergo ecological change, the ‘finality’ we speak of here is a mature, self-sustaining woodland ecosystem that is the objective of the restoration project.

early stages of tree establishment. However, efforts were made to mitigate the assumed deleterious visual aesthetic effects of these temporary activities: transparent vole guards and green plastic tree tubes were chosen as they are relatively visually unobtrusive; the perimeter fence was positioned out of lines of sight from within the valley; and trees were planted in a way that was intended to mimic natural regeneration – fallen cherry tree petals, for example, were used as a guide to where saplings should be planted (Chalmers, 2009: 161). These actions give a clear indication that there were practical challenges to the cultivation of particular aesthetic qualities that correctly align with the Group’s aesthetic values.

At the same time, direct forms of management so common to other types of ecological restoration, including landscaping and earthmoving, pruning, strimming, uprooting fallen trees, removing dead matter, and the application of pesticides, have been ruled out within the valley, with the intention that over the long-term all forms of management will be relinquished to allow the stochastic, autonomous, qualities of wild non-human nature to predominate. This, undoubtedly, jars with the ways in which ecological restoration policymaking so often plays out: uncertainty is addressed through adaptive management approaches, in which direct monitoring of restored subjects and objects feeds back into and - where necessary - adapts ongoing restoration and management practices through time (see among many examples Allen *et al.*, 2002; Schreiber *et al.*, 2004; Teal and Weishar, 2005; Thom, 2000). Even when a non-wild but largely self-sustaining ecosystem is the desired outcome, ‘it may and probably will need periodic post-restoration management to resist pervasive human activities, such as those caused by damaging land-use activities and the inexorable spread of exotic species’ (Clewell, 2000: 216).

In fact, the relinquishment of post-restoration management practices has been castigated to the point where it is seen as a project failure, particularly when this poses a threat to maintaining

reintroduced native species (see for example Galbraith-Kent and Handel, 2007; Norton, 2009). At Carrifran, by contrast, any future loss of introduced - or for that matter, existing - native species is understood to be consistent with the development of autonomous non-human nature. Maturation of vegetation within the valley has already led to the decline of Orange tip butterflies, as well as ground nesting birds such as wheatears and stonechats, while woodland bird species such as dunnock, blackcap, garden warbler and siskin are now appearing within the valley (Ashmole and Ashmole, 2009: 199-201), giving only a sense of the consequences - both ecological and aesthetic - of unmanaged change over a longer time frame.

Unmanaged change will not only come about through species mobility or competition, but also through the restoration of ecological processes. Current drainage of the valley will not be maintained, so Carrifran Burn, which runs through the centre of the valley floor, may well with time carve a different channel - unlike restored rivers that are managed to prevent major morphological changes - or sections of it may become blocked by dead vegetation, causing localised flooding and watery habitats, as is hoped by the Group (Ashmole and Ashmole, 2009: 204). Natural disturbances, such as fires not originating from human activities, are to be tolerated (Wildwood Group, 2000: 66-67), which would radically alter the valley's composition and structure, and completely transform the valley's aesthetic character.

We see, then, that a lack of a 'fixed view' of woodland structure and composition means that this vision for rewilding is necessarily devoid of specific details of aesthetic qualities, while it remains affectively vivid in regard to the general landscape character that can be judiciously predicted.¹³ This allows the Group's members a high degree of freedom in their individual imagining of desired aesthetic qualities and experiences. For example, during an interview with

¹³ See Brady (2014) on making predictions of future natural aesthetic qualities in the case of climate change.

the project's manager, he stated that his hope was to 'see a woodland teeming with bird life and deer and badger and everything else', while a previous project manager, still involved and supportive of the project, said:

I have walked through European wildwood and so having things in there that are scary is quite an interesting thing to think of....it would be wonderful to have wild cat rushing around and...I'd be quite happy to walk there with wolves, I'd be happy to walk there with bears as long as I had a rifle.

The Group has briefly dwelt upon the desirable presence of charismatic mammals to increase Carrifran's wild qualities; indeed, lynx, wildcats, pine martens, wild boar, and wolves were all present 6,000 years ago, but are no longer so (Ashmole and Ashmole, 2009: 62). However, the valley is deemed too small to support such mammals, though this may be possible in a century, if a habitat network is created that links Carrifran to other extensive areas of restored woodland (Ashmole and Ashmole, 2009: 206; George Moffat, 2010).

The envisioning of future aesthetic qualities of Carrifran, as conceived by the Group, are best captured through the notion of 'ampliative imagination' (Brady, 2003). Here, Brady describes this type of imaginative activity as involving the more inventive or productive powers of imagination in a way that is responsive to the temporal qualities of natural places. It amplifies what is given to the senses, and can involve visual and non-visual leaps of imagination that enable us to construct a narrative of something's past or future. We want to emphasise, with Brady, that imagination is not operating in necessarily fanciful ways here; rather, it is linked to what one might reasonably imagine once existed and what may exist again in the rewilded landscape of the distant future. With Carrifran, one might imagine the valley in its deep past, as

carved out by glaciers, or its more recent past, as grazed by sheep, and then imagine a distant future state of mature woodland that is enlivened by birdsong and the presence of wild charismatic mammals.

Other types of rewilding projects - especially animal reintroductions - will bring about perceptible change within a relatively short space of time, both in terms of the bodily presence of the organisms and their wider ecosystem effects. This is of aesthetic interest for at least two reasons. Firstly, the appearance of new qualities may cause surprise or delight, particularly when such qualities have not been experienced within a given region during an appreciator's lifetime. This will only be heightened when, say, this experience is of a relatively rare and freely mobile animal wary of the presence of humans. Secondly, the appearance of new qualities may pose a challenge to an appreciator's sense of place, especially when an appreciator has developed a strong place attachment to a given region over time (see Drenthen, 2009). The sudden arrival, for instance, of wild mammal species may delight, but equally may discombobulate when experienced in what was previously a closely managed landscape.

4. THE UNSCENIC AND TERRIBLE BEAUTY OF REWILDING

Because of its anti-interventionist objectives and procedures, rewilding can present some interesting cases of the emergence of more challenging aesthetic experiences such as ugliness, the 'unscenic', and terrible beauty (Saito, 1998a; Korsmeyer, 2005). In landscape-level rewilding projects, there are likely to be practices that encourage less conventionally 'pretty' or 'beautiful' landscapes, and because they will be subject to less management there will not be practices in place to preserve aesthetically valued qualities, such as a scenic viewpoint, or prevent more difficult aesthetic experiences.

To give just one example, we have already stated that at Carrifran the uprooting of fallen trees and the removal of dead vegetational matter will not occur. This is in large part because of the ecological role that dead wood plays in sustaining an autonomous woodland ecosystem, from acting as a habitat for a range of organisms to serving as a vital nutrient source, but also because of the aesthetic qualities dead wood engenders. While vegetative decomposition is often attributed negative aesthetic value (Daniel, 2001: 18; Gobster, 1999: 56), the Carrifran rewilders see dead wood as an important means of inculcating wild qualities: ‘tidy woodlands are common enough, but rare is the forest in Britain that feels wild and natural. So we shall leave fallen trees and branches where they fall, we shall walk around tangles’ (Ashmole and Ashmole, 2009: 204). In this quote we can detect a positive aesthetic valuation of fallen and dead wood, because it produces the sensation of being in an unmanaged place, as the trees are self-directed in their growth and spatial ordering.

Additionally, the human/non-human relations that occur through such encounters create aesthetic engagement rather than detachment: an embodied, immersed, and felt sensory experience of unruly non-human nature, rather than a scenic form of aesthetic appreciation; and the valorisation of mobility over the static and formally pictorial. Such experiences of rewilding are potentially aesthetically challenging not only in the sense that they are unscenic - because they include messy or ugly things (the sight of dying vegetation, decomposing animal bodies, or extensive fire damage; the stagnant smells of a blocked river channel) and because they necessitate a closeness that prevents scenic distance - but also because this mode of aesthetic experience (on foot, proximate, and changing from visit to visit, making the spatial composition of subjects and objects likely unmappable) is physically and navigationally demanding. It is, for

instance, more challenging to traverse a woodland that has a dense understory than one that has been cleared of dying or otherwise unwanted foliage.¹⁴

Aesthetically challenging encounters are also afforded in rewilding projects where there are no intentional efforts to disavow human cultural activities and landscape modifications. During winters at the Oostvaardersplassen reserve, supplementary food has not been provided for the animals, in accordance with the anti-interventionist stance adopted by the reserve's managers (Vera, 2009). As a result, some of the red deer and the de-domesticated Heck cattle and Konik ponies have been dying each year from a lack of food, which has proven to be highly - and very publicly - controversial.¹⁵ This anti-interventionist stance has also meant that animal carcasses have been left where they fall, providing a source of food for raptors, such as White-tailed eagles (Vera, 2009: 35).

The point we wish to stress here is that the eventual rescinding of restoration management practices, which is foundational to each formulation of rewilding and which sets rewilding apart from the broader concept of ecological restoration, has implications for the types of ecological processes that are revealed to a human appreciator, and thus likely aesthetic experiences. Those involved in a particular rewilding project are likely to attach positive value to such aesthetic experiences, even when they encompass death, decomposition, and scavenging, because they are the logical outcome of autonomous non-human nature.

At the same time, however, we know that for an ecological restoration proposal to gain support from external funders, institutional regulators, and the broader public, it is necessary that likely resulting perceptual changes are understood as an outcome of a new management regime that foregrounds non-human autonomy, rather than, say, human neglect of, or disregard for,

¹⁴ For a useful discussion of aesthetics and the physical challenge of being in and navigating some kinds of environments, see Callicott's (1994) discussion of bogs.

¹⁵ See Vera (2009: 35) for more information about the controversy surrounding the lack of supplementary feed.

valued places. An often cited example of an aborted restoration project from 1996 provides a good example of this. In DuPage County in west Chicago, a ten-year land management plan was developed by district restoration ecologists to restore 7,000 acres of densely wooded land to an oak savanna and open prairie ecosystem. This necessitated the felling of approximately half a million trees through cutting and burning regimes, and the removal of deer populations. Local community groups responded negatively to the proposals by appealing to the loss of valued aesthetic qualities and experiences if the proposals were to go ahead, culminating with the charge that the project amounted to ‘environmental vandalism’. This in turn led to a large media-focused campaign against the project and its eventual suspension (Gobster, 1997, 2000).

Rewilding thus presents a challenge to its proponents, particularly in landscapes where there is an existing preference for neatness and other visual clues that humans are actively managing a landscape, and a concurrent dislike for messy or unruly vegetation. From previous empirical research, this seems especially the case in agricultural landscapes where neat, rectilinear forms are associated with good land management and a strong so-called work ethic (Egoz *et al.*, 2006).

We have already noted that proponents of rewilding have, in almost all cases, focused their conceptual energies on the reintroduction of charismatic mammalian species and other megafauna. We find this problematic for various reasons, but for the purposes of brevity we wish to highlight just one: to focus too narrowly on such species ignores wider efforts to re-introduce and establish other less charismatic species - not to mention ecological processes - particularly in cultural or urbanized landscapes. Nonetheless, given that much of the rewilding literature and actually existing rewilding projects in North America and Europe *do* maintain such a focus, we want to point to another challenging aesthetic feature that stems from the reintroduction of such

species.¹⁶ When carnivorous mammalian species are reintroduced (particularly wolves, bears, and big cats), this will also introduce the possibility of encounters that are exciting but also dangerous, causing a sense of anxiety and fear, perhaps evoking something like a sublime aesthetic experience. Although not limited to reintroductions, that danger is also linked to predation, which, if witnessed, may evoke more difficult forms of aesthetic encounters. Ned Hettinger (2010) adopts the concept of ‘terrible beauty’, to describe predation. Imagine the majestic beauty of a wolf and its skill in action mixed with the tragic feeling of a prey animal captured and eaten. Here, we have the exciting drama of the moment yet also the disturbing emotions that will accompany witnessing a bloody kill.

5. CONCLUSION

In this paper we have attended to some of the implications of rewilding from the perspective of environmental aesthetics. We have demonstrated that rewilding is distinct from other forms of ecological restoration in that it emphasises autonomous self-regulation within and amongst non-human species and ecological processes. As a consequence of this distinctive feature, we in turn outlined how rewilding brings about a constellation of aesthetic qualities that are temporally and experientially challenging. Here, for instance, we showed that rewilding demands of an aesthetic appreciator more flexibility and openness to change across time in so far as unpredictability is characteristic of rewilding. We also showed how the anti- or minimal interventionist objective of rewilding is at odds with the preservation of existing beauty, and is likely to lead to the emergence of difficult aesthetic experiences such as ugliness and terrible beauty.

¹⁶ For an overview of some large-scale rewilding projects in Europe, see the ‘Rewilding Europe’ project website: <http://www.rewildingeurope.com/>

How people respond to these aesthetic outcomes will depend very much on the rewilded places in question, the ways in which they change, and the context in which such places are experienced. For those directly involved in, or supportive of, a particular rewilding project, we may detect a ‘positive aesthetics’ account in which ‘negative aesthetic judgments have little or no place’ (Carlson, 2002: 72).¹⁷ This, as we have detailed, is certainly the case for the Carrifran rewilders. For others, we might find that people quickly come to value the ‘messiness’ and diversity of a rewilded place, especially compared to the aesthetic monotony that came before. In other cases, aesthetic appreciation may come about rather more slowly, say through a gradual awareness of the ecological role of certain species and processes. Either way, we would suggest that it is vital that those advocating for rewilding policies directly confront any potential fallout from inculcating challenging aesthetic experiences. Policy makers often need to gain popular consent and support for interventions that seek to radically alter the ecological and so aesthetic composition of a given landscape – something that was not achieved in DuPage County in the mid-1990s. With this in mind, Sheila Lintott’s (2006) discussion of how educational programmes can bring about the appreciation of things previously found ugly or repugnant is pertinent, as is Joan Iverson Nassauer’s notion of ‘cues to care’ (1995), which forwards strategies for communicating the ecological value of challenging aesthetic experiences.

When we contrast these types of rewilding projects with restorations that require human interventions to maintain beauty (cf., Lee 1995), we can discern a granting of aesthetic autonomy to more-than-human nature that is consistent with the common call among environmental aestheticians for appreciating nature ‘on its own terms’ (Saito, 1998b). Essentially, this call is for respecting natural environments as autonomous assemblages which ought not to be valued

¹⁷ We want to emphasise that here we are making an observation about positive aesthetics in practice, and not offering our support to this view. Indeed, one of us (Brady, 2012) has argued against the adoption of Carlson’s positive aesthetics.

through overly humanising, anthropocentric, or artistically driven aesthetic perspectives. The rewilders of Carrifran Wildwood, for example, have a vision of enabling non-human, natural autonomy to express itself in ways that could work against the preservation of scenic beauty.

Finally, we have advanced a more inclusive conceptualisation of rewilding than that which is generally promoted in environmental conservation circles. Using Woods' (2005) definition of wildness as a starting point, we have outlined how rewilding does not equate to the (re)establishment of wilderness experiences, as it is equally applicable in densely humanly populated and urbanised landscapes. Accordingly, it is our hope that proponents of rewilding will embrace this more inclusive vision of rewilding, and actively advocate urban and peri-urban rewilding in the future.

BIBLIOGRAPHY

- Allen, C.D., M. Savage, D.A Falk, K.F. Suckling, T.W. Swetnam, T. Schulke, P.B. Stacey, P. Morgan, M. Hoffman, and J.T. Klingel. 2002. 'Ecological restoration of Southwestern ponderosa pine ecosystems: A broad perspective'. *Ecological Applications* 12(5): 1418–1433.
- Aronson, J., S.J. Milton and J.N. Blignaut. 2007. 'Restoring natural capital: Definition and rationale'. In Aronson, J., S.J. Milton and J.N. Blignaut (eds), *Restoring Natural Capital: Science, Business, and Practice*, pp.3-8. Washington D.C.: Island Press.
- Arts, K., A. Fischer and R. Van der Wal. 2012. 'The promise of wilderness between paradise and hell: A cultural-historical exploration of a Dutch National Park'. *Landscape Research* 37(3): 239-256.
- Ashmole, M. and P. Ashmole. (eds) 2009. *The Carrifran Wildwood Story: Ecological Restoration from the Grass Roots*. Ancrum: Borders Forest Trust.
- Ashmole, P. and R. Tipping. 2009. 'The peat core from Rotten Bottom – a unique record of a changing environment'. In Ashmole, M. and P. Ashmole (eds.), *The Carrifran Wildwood Story: Ecological Restoration from the Grass Roots*, pp.76-80. Ancrum: Borders Forest Trust.
- Bauer, N., A. Wallner and M. Hunziker. 2009. 'The change of European landscapes: Human-nature relationships, public attitudes towards rewilding, and the implications for landscape management in Switzerland'. *Journal of Environmental Management* 90: 2910-2920.
- Bavington, D. 2005. 'Homo Administrator: managing a needy nature?'. In T. Heyd (ed.), *Recognizing the Autonomy of Nature: Theory and Practice*, pp.121-136. New York: Columbia University Press.
- Brady, E. 2003. *Aesthetics of the Natural Environment*. Edinburgh: Edinburgh University Press.
- Brady, E. 2012. 'The ugly truth: Negative aesthetics and environment'. *Royal Institute of Philosophy Supplement* 69: 83-99.
- Brady, E. 2014. 'Aesthetic value, ethics and climate change'. *Environmental Values* 23(5): 551-570.
- Brigham, J. 1993. 'Reclamation artists: A report from Boston.' *Leonardo* 26 (5): 379-385.
- Brook, I. 2006. 'Restoring landscapes: The authenticity problem.' *Earth Surface Processes and Landforms* 31: 1600-1605.

- Callicott, J.B. 1994. 'The Land Aesthetic'. In C.K. Chapple, C.K. (ed.), *Ecological Prospects: Scientific, Religious, and Aesthetic Perspectives*, pp. 169-170. Albany: State University of New York Press.
- Carlson, A. 2002. *Aesthetics and the Environment*. New York: Routledge.
- Caro, T. 2007. 'The Pleistocene re-wilding gambit'. *Trends in Ecology and Evolution* 22(6): 281-283.
- Chalmers, H. 2009. 'Establishing woodland at Carrifran'. In Ashmole, M. and P. Ashmole (eds), *The Carrifran Wildwood Story: Ecological Restoration from the Grass Roots*, pp. 154-167. Ancrum: Borders Forest Trust.
- Chapman, R. 2004. 'Crowded solitude: Thoreau on wildness'. *Journal of Environmental Philosophy* 1: 58-72.
- Chapman, R. 2006. 'Ecological restoration restored'. *Environmental Values* 15: 463-478.
- Choi, Y.D. 2004. 'Theories for ecological restoration in changing environment: Toward 'futuristic' restoration'. *Ecological Research* 19: 75-81.
- Clewell, A.F. 2000. 'Restoring for natural authenticity'. *Ecological Restoration* 18 (4): 216-217.
- Cole, D.N. 2000. 'Paradox of the primeval: Ecological restoration in wilderness'. *Ecological Restoration* 18(2): 77-86.
- Cromsigt, J.P.G.M. and M. te Beest. 2014. 'Restoration of a megaherbivore: Landscape-level impacts of white rhinoceros in Kruger National Park, South Africa'. *Journal of Ecology* 102 (3): 566-575.
- Daniel, T.C. 2001. 'Aesthetic preference and ecological sustainability'. In Sheppard, S.R.J. and H.W. Harshaw (eds.), *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics*, pp.15-30. Wallingford: CABI Publishing.
- Diggelen, R.V., A.P. Grootjans and J.A. Harris. 2001. 'Ecological restoration: State of the art or state of the science?' *Restoration Ecology* 9 (2): 115-118.
- Donlan, J., H.W. Greene, J. Berger, C.E. Bock, J.H. Bock, D.A. Burney, J.A. Estes, D. Foreman, P.S. Martin, G.W. Roemer, F.A. Smith and M.E. Soule'. 2005. 'Re-wilding North America'. *Nature* 436: 913-914.
- Drenthen, M. 2005. 'Wildness as a critical border concept: Nietzsche and the debate on wilderness restoration'. *Environmental Values* 14: 317-337.

- Drenthen, M. 2009. 'Ecological restoration and place attachment: emplacing non-places?'. *Environmental Values* 18: 285-312.
- Egoz, S., J. Bowring and H.C. Perkins. 2006. 'Making a 'mess' in the countryside: Organic farming and the threats to sense of place'. *Landscape Journal* 25(1): 54-66.
- Elliot, R. 1997. *Faking Nature: The Ethics of Environmental Restoration*. London: Routledge.
- Foreman, D. 2004. *Rewilding North America: A Vision for Conservation in the 21st Century*. Washington D.C.: Island Press.
- Foster, J. 2005. 'Restoration of the Don Valley Brick Works: whose restoration? Whose space?'. *Journal of Urban Design* 10 (3): 331-351.
- Fuhlendorf, S.D., D.M. Engle, J. Kerby and R. Hamilton. 2008. 'Pyric herbivory: rewilding landscapes through the recoupling of fire and grazing'. *Conservation Biology* 23(3): 588-598.
- Galbraith-Kent, S.L. and S.N. Handel. 2007. 'Lessons from an urban lakeshore restoration project in New York City'. *Ecological Restoration* 25(2): 123-128.
- Gamborg, C., B. Gremmen, S.B. Christiansen and P. Sandoe. 2010. 'De-domestication: Ethics at the intersection of landscape restoration and animal welfare'. *Environmental Values* 19: 57-78.
- Gobster, P. H. 1997. 'The Chicago wilderness and its critics: The other side: A survey of arguments'. *Restoration and Management Notes* 15(1): 32-37.
- Gobster, P. H. 1999. 'An ecological aesthetic for forest landscape management'. *Landscape Journal*. 18(1): 54-64.
- Gobster, P.H. 2000. 'Introduction: Restoring nature: Human actions, interactions, and reactions'. In Gobster, P.H. and B.R. Hull (eds), *Restoring Nature: Perspectives from the Social Sciences and Humanities*, pp.1-20. Washington D.C.: Island Press.
- Gross, M. 2003. *Inventing Nature: Ecological Restoration by Public Experiments*. Lanham, MD: Lexington Books.
- Hands, D.E. and R.D. Brown. 2002. 'Enhancing visual preference of ecological rehabilitation sites'. *Landscape and Urban Planning* 58: 57-70.
- Hargrove, E.C. 2008. 'The historical foundations of American environmental attitudes'. In Carlson, A. and S. Lintott (eds), *Nature, Aesthetics, and Environmentalism: From Beauty to Duty*, pp. 29-48. New York: Columbia University Press.

- Harris, J. A., R. J. Hobbs, E. Higgs and J. Aronson. 2006. 'Ecological restoration and global climate change'. *Restoration Ecology* 14(2): 170–176.
- Hawley, S. 2011. *Recovering a Lost River: Removing Dams, Rewilding Salmon, Revitalizing Communities*. Boston: Beacon Press.
- Hettinger, N. 2010. 'Animal beauty, ethics, and environmental preservation'. *Environmental Ethics* 32(2): 115-134.
- Hettinger, N. 2014. 'Book review of Monbiot, G. 'Feral: Searching for Enchantment on the Frontiers of Rewilding''. *Environmental Values* 23(3): 361-363.
- Higgs, E. 2003. *Nature by Design: People, Natural Process, and Ecological Restoration*. Cambridge, MA: MIT Press.
- Hintz, J. 2007a. 'Some political problems for rewilding nature'. *Ethics, Place & Environment* 10(2): 177-192.
- Hintz, J. 2007b. 'Response to Woods: On with the debate (but let's be careful with those swords)'. *Ethics, Place & Environment* 10(2): 208-216.
- Hobbs, R.J. and J.A. Harris. 2001. 'Restoration ecology: Repairing the Earth's ecosystems in the new Millennium'. *Restoration Ecology* 9(2): 239-246.
- Huynh, H.M. 2010. 'Pleistocene re-wilding is unsound conservation practice'. *BioEssays* 33(2): 100-102.
- Jentsch, A. 2007. 'The challenge to restore processes in face of nonlinear dynamics – on the crucial role of disturbance regimes'. *Restoration Ecology* 15(2): 334–339.
- Jordan III, W.R. 2003. *The Sunflower Forest: Ecological Restoration and the New Communion with Nature*. Berkeley: University of California Press.
- Junker, B. and M. Buchecker, (2008) 'Aesthetic preferences versus ecological objectives in river restorations'. *Landscape and Urban Planning* 85: 141-154.
- Katz, E. 2000. 'The big lie: The human restoration of nature'. In W. Throop (ed.), *Ecological Restoration: Ethics, Theory and Practice*, pp.83-93. Amherst: Humanity Books.
- Klaver, I., J. Keulartz, H. van den Belt and B. Gremmen. 2002. 'Born to be wild: A pluralistic ethics concerning introduced large herbivores in the Netherlands'. *Environmental Ethics* 24(1): 3-21.
- Korsmeyer, C. 2005. 'Terrible beauties'. In M. Kieran (ed.), *Contemporary Debates in Aesthetics and the Philosophy of Art*, pp.51-63. Malden, MA: Blackwell.

- Lee, K. 1995. 'Beauty forever?'. *Environmental Values* 4: 213-225.
- Light, A. 2000 'Restoration, the value of participation, and the risks of professionalization'. In Gobster, P.H and. R.B. Hull (eds), *Restoring Nature: Perspectives from the Social Sciences and Humanities*, pp.163-181. Washington D.C.: Island Press.
- Lintott, S. 2008. 'Toward eco-friendly aesthetics'. *Environmental Ethics* 28(1): 57-76.
- Lorimer, J. and C. Driessen. 2014. 'Wild experiments at the Oostvaardersplassen: Rethinking environmentalism in the Anthropocene'. *Transactions of the Institute of British Geographers* 39: 169–181.
- Martin, P.S. 2005. *Twilight of the Mammoths: Ice Age Extinctions and the Rewilding of America*. Berkeley: University of California Press.
- Matthews, M. 2009. 'Seed collection and propagation'. In Ashmole, M. and P. Ashmole (eds), *The Carrifran Wildwood Story: Ecological Restoration from the Grass Roots*, pp.145-150. Ancrum: Borders Forest Trust.
- Martynoga, F. 2009. 'People in historic times'. In Ashmole, M. and P. Ashmole (eds), *The Carrifran Wildwood Story: Ecological Restoration from the Grass Roots*, pp.58-63. Ancrum: Borders Forest Trust.
- Merchant, C. 1991. 'Restoration and reunion with nature'. In B. Willers (ed.), *Learning to Listen to the Land*, pp. 206-211. Washington D.C.: Island Press.
- Monbiot, G. 2013. *Feral: Searching for Enchantment on the Frontiers of Rewilding*. London: Allen Lane.
- Morrison, D. 1987. 'Landscape restoration in response to previous disturbance', in M.G. Turner (ed.), *Landscape Heterogeneity and Disturbance*, pp.159-172. New York: Springer-Verlag.
- Mulligan, M. 2001. 'Re-enchanting conservation work: reflections on the Australian experience'. *Environmental Values* 10(1): 19-33.
- Murray, A.H. 1991. 'Pits and pitfalls: Harriet Feigenbaum's reclamation art'. *Woman's Art Journal* 12(1): 29-35.
- Nassauer, J.I. 1995. 'Messy ecosystems, orderly frames'. *Landscape Journal* 14(2): 161-170.
- Norton, D. A. 2009. 'Species invasions and the limits to restoration: Learning from the New Zealand experience'. *Science* 325: 569-571.
- Oliveira-Santos, L.G.R. and F.A.S. Fernandez. 2009. 'Pleistocene rewilding, Frankenstein ecosystems, and an alternative conservation agenda'. *Conservation Biology* 24(1): 4-6.

- Porteous, J.D. 1996. *Environmental Aesthetics: Ideas, Politics and Planning*. London: Routledge.
- Prior, J.D. (2012). *The roles of aesthetic value in ecological restoration: Cases from the United Kingdom*. PhD thesis, The University of Edinburgh.
- Saito, Y. 1998a. 'The aesthetics of unscenic nature'. *The Journal of Aesthetics and Art Criticism* 56(2): 101-111.
- Saito, Y. 1998b. 'Appreciating Nature on its Own Terms'. *Environmental Ethics* 20: 135-149.
- Sandlos, J. 2005. 'Purple Loosestrife and the "bounding" of nature in North American wetlands'. In T. Heyd (ed.), *Recognizing the Autonomy of Nature: Theory and Practice*, pp.137-153. New York: Columbia University Press.
- Sandom, C., C.J. Donlan, J-C. Svenning and D. Hansen. 2013. 'Rewilding'. In Macdonald, D.W. and K.J. Willis (eds.), *Key Topics in Conservation Biology 2*, pp.430-451. Oxford: John Wiley & Sons.
- Sayre, N.F. 2010. 'Climax and "original capacity": the science and aesthetics of ecological restoration in the southwestern USA'. *Ecological Restoration* 28 (1): 23-31.
- Schreiber, E.S.G., A.R. Bearlin, S.J. Nicol and C.R. Todd. 2004. 'Adaptive management: A synthesis of current understanding and effective application'. *Ecological Management & Restoration* 5(3): 177-182.
- Scoones, I. 1999. 'New ecology and the social sciences: What prospects for a fruitful engagement?' *Annual Review of Anthropology* 28: 479-507.
- Seddon, P.J., A. Moehrensclager and J. Ewen. 2014. 'Reintroducing resurrected species: Selecting DeExtinction candidates'. *Trends in Ecology & Evolution* 29(3): 140-147.
- SER. 2004. *The SER International Primer on Ecological Restoration*. www.ser.org and Tucson: Society for Ecological Restoration International.
- Smith, C. I. 2005. 'Re-wilding: Introductions could reduce biodiversity'. *Nature* 437: 318.
- Soulé, M. and R. Noss. 1998. 'Rewilding and biodiversity: Complementary goals for continental Conservation'. *Wild Earth* 8: 19-28.
- Stolzenburg, W. 2006. 'Where the wild things were'. *Conservation in Practice* 7(1): 28-34.
- Taylor, P. 2005. *Beyond Conservation: A Wildland Strategy*. London: Earthscan.

- Teal, J.M. and L. Weishar. 2005. 'Ecological engineering, adaptive management, and restoration management in Delaware Bay salt marsh restoration'. *Ecological Engineering* 25(3): 304-314.
- Thom, R.M. 2000. 'Adaptive management of coastal ecosystem restoration projects'. *Ecological Engineering* 15(3-4): 365-372.
- Throop, W. 2000. 'Introduction'. In W. Throop (ed.), *Ecological Restoration: Ethics, Theory and Practice*, pp.11-23. Amherst: Humanity Books.
- Turner, F. 1990. 'The self-effacing art: Restoration as imitation of nature'. In Jordan III, W.R., M.E. Gilpin and J.D. Aber (eds), *Restoration Ecology: A Synthetic Approach to Ecological Research*, pp.47-50. Cambridge: Cambridge University Press.
- Turner, F. 1994. 'The invented landscape'. In Baldwin Jr, A.D., J. De Luce and C. Pletsch (eds), *Beyond Preservation: Restoring and Inventing Landscapes*, pp.35-66. Minneapolis: University of Minnesota Press.
- Vera, F.W.M. 2009. 'Large-scale nature development – the Oostvaardersplassen'. *British Wildlife* 20(5): 28-36.
- Wolverton, S. 2010. 'The North American Pleistocene overkill hypothesis and the re-wilding debate'. *Diversity and Distributions* 16(5): 874-876.
- Wildwood Group 2000. *Carrifran Wildwood Project, Native Woodland Restoration in the Southern Uplands of Scotland: Management Plan*. Ancrum: Borders Forest Trust.
- Woods, M. 2005. 'Ecological restoration and the renewal of wildness and freedom'. In T. Heyd (ed.), *Recognizing the Autonomy of Nature: Theory and Practice*, pp.170-188. New York: Columbia University Press.
- Woods, M. 2007. 'Conservation biology, deep ecology, and the outside world: Some problems for the politics of nature'. *Ethics, Place & Environment* 10(2): 192-207.