

13. Magurran, A. E. (2016). How ecosystems change. *Science*, 351(6272), 448-449.
14. These include agricultural intensification, plantation forestry, wetland drainage, industrial fisheries, etc. but fail to mention moorland management for grouse shooting – presumably because this is a “traditional” activity. Rotherham, I. (2010). *Cultural severance and the end of tradition. End of Tradition?* 8, 178.
15. MacKinnon, J. B. (2013). *The Once and Future World: Nature as it Was, as it Is, as it Could be*. Houghton Mifflin Harcourt.
16. See for example the thoughts of Miles King on this matter <https://anewnatureblog.wordpress.com/2016/06/24/some-initial-thoughts-on-a-post-cap-farm-subsidy-system/>
17. http://resolutions.wild10.org/wp-content/uploads/2013/10/Res21_Non-intervention-Management-England.pdf and <http://www.wildlandresearch.org/media/uploads/WILD10-Vision-Wilder-Europe-2015-ver-2-FINAL.pdf>
18. Written evidence to An environmental scorecard, House of Commons Environmental Audit Committee, Fifth Report of Session 2014-15 <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/an-environmental-scorecard/written/11151.pdf>
19. Igoe, J., & Brockington, D. (2016). Neoliberal Conservation* A Brief Introduction. *The Environment in Anthropology: A Reader in Ecology, Culture, and Sustainable Living*, 324.
20. Pearson, R. G. (2016). Reasons to conserve nature. *Trends in ecology & evolution*, 31(5), 366-371.
21. Cook, B., Forrester, J., Bracken, L., Spray, C., & Oughton, E. (2016). Competing paradigms of flood management in the Scottish/English borderlands. *Disaster Prevention and Management*, 25(3), 314-328.
- and Carver, S. (2016). Flood management and nature – can rewilding help? *ECOS*, 37(1), 32-42.
22. Brown, L. E., Holden, J., & Palmer, S. M. (2014). Effects of moorland burning on the ecohydrology of river basins. Key findings from the EMBER project. University of Leeds. See http://www.wateratleeds.org/fileadmin/documents/water_at_leeds/Ember_report.pdf (accessed 20 June 2016). and Avery, M. (2015). *Inglorious – Conflict in the Uplands*. London: Bloomsbury
23. Diana Lambert (2015) pers comm.

Steve Carver is a Geographer and Senior Lecturer at the University of Leeds. He coordinates the Wildland Research Institute. S.J.Carver@leeds.ac.uk

Blocking agricultural drainage ditches has slowed runoff and increased floral diversity, Alladale Wilderness Reserve.

Photo: Jennifer Gooden



The red tape of rewilding

As rewilding gains traction in conservation, a host of regulations and policies makes implementation more difficult. This article summarises results of a study of regulatory barriers to rewilding in the UK and the Netherlands.

JENNIFER GOODEN

Regulatory Context

In recent years, there has been an increasing interest in restoring functioning natural ecosystems¹, a phenomenon reflected in the growing attention on rewilding. As a form of conservation, rewilding operates in the context of regulations and policies that govern biodiversity, agriculture, animal welfare, and public safety. The institutions related to these sectors specify the rules of the game,² encoding the values, management practices, and scientific knowledge of the time of their establishment. Yet, as a result of its departure from mainstream conservation approaches, rewilding encounters friction with governance institutions. My research used a barrier analysis approach, a method drawn from research on adoption of energy efficiency measures,^{3,4} to identify the tensions between rewilding projects and the regulatory environment in which they operate in the UK and the Netherlands.

The barrier analysis involved two steps: First, identification of a range of barriers and disincentives from a literature survey, 9 site visits, and 18 semi-structured interviews with rewilding practitioners; Second, a survey based on the barriers and disincentives identified in step 1, distributed to all interviewees, in which respondents rated each identified barrier based on the extent to which it hindered his/her work (n=11; multiple respondents from a single site were weighted for equal representation by site).

Information was collected at sites considered representative of rewilding projects in the UK and Netherlands (see list below).

Study Sites

Name	Location	Landowner	Size	Established
Alladale Wilderness Reserve	Scotland	Private	8,000ha	2003
Blaeneinion	Wales	Private	30 ha	2004
Cairngorms National Park	Scotland	Various	450,000ha	2003
Cambrian Wildwood	Wales	Wales Wild Land Foundation	N/A	Organization formed
Dundreggan Estate	Scotland	Trees for Life	4,000ha	2008
Ennerdale	England	Primarily Forestry Commission National Trust, and United Utilities	4,700ha	2002
Knepp Castle Estate	England	Private	1,400ha	Rewilding activities began in 2001
Millingerwaard	Netherlands	Forestry Commission	375ha	Mid-1990s
Oostvaardersplassen	Netherlands	Forestry Commission	6,000ha	1968
	Staatsbosbeheer			

Policy barriers to rewilding

The policy barriers that emerged from the barrier analysis are set out below, placed in order from greatest to least hindrance.

Dangerous and wild animals regulations: In the UK, the Dangerous Wild Animals Act of 1976 protects the public from kept wild animals and requires that proper care be given to animals. Rewilding practitioners saw these regulations as significant barriers to rewilding, particularly requirements to keep wild animals in

enclosures, to obtain permits or licenses to release formerly native animals outside enclosures or keep them inside enclosures, and to protect public safety. Some interviewees saw fencing as a necessary short-term measure to achieve long-term goals, such as forest regeneration, while others saw enclosures as antithetical to rewilding. Barriers concerning keeping and release of animals were apparent in site visits and emerged strongly in the survey, especially amongst privately owned sites.



Konik horses at the Oostvaardersplassen.
Photo Jennifer Gooden

Animal by-product regulations: To reduce the biohazard risk that decaying carcasses may pose to agriculture, the European Commission's Animal By-Products Regulation, passed in 2009, requires livestock carcasses be collected, transported, treated, and disposed of in accordance with accepted practices. Interviewees from nearly every site said that requirements to dispose of animal carcasses restricted their work by disrupting ecological processes of scavenge and decay. This impact was most pronounced in the Netherlands. Practitioners understood the origin of the regulations, given the importance of agriculture to the economy and culture, yet found that biohazards were not as great at their sites due to comparatively low stocking densities, which lessens the risk of disease spreading among animals. Although animal byproduct regulations specifically allow the feeding of animal carcasses to endangered or protected species of necrophagous birds, wild animals, and other species living in their natural habitat for the promotion of biodiversity, in practice this does not appear to occur at rewilding sites.

Energy policies. The Renewable Energy Directive of 2009 requires the EU to generate at least 20% of electricity from renewable sources by 2020, and some national governments, such as Scotland, have set more ambitious targets. Despite supporting renewable energy in principle, rewilding practitioners found that wind turbine developments and transmission lines in remote areas to be inconsistent with wild lands due to impacts on visual amenity and landscape character. In some instances land potentially available for wildlife management or rewilding schemes has been allocated to wind turbine developments instead because of the lucrative offers available. While noted only in Scotland during the interview phase, practitioners in all countries reported impacts of energy infrastructure in surveys.

Agricultural policy. Enacted in 1962, the Common Agricultural Policy is one of the oldest and most central policies of the European Union, primarily implemented through direct and indirect financial transfers to producers. Agricultural subsidy was a topic of discussion at nearly every interview, and the breadth of topics illustrated that attitudes about subsidy were complex. The most significant barrier was the distortion of the market, leading to increased land values and continued use of agriculturally marginal land that might otherwise be available for nature. This effect was felt most acutely at sites operated by NGOs.

Agricultural subsidies for specific animals and activities varied in their impact on rewilding. Subsidies for sheep grazing were most detrimental. Subsidies for cattle were seen as detrimental in England, neutral in the Netherlands and Scotland, and slightly positive in Wales. Some subsidies, such as those for heritage livestock breeds, tree planting, and deer culling, were beneficial to rewilding.

In addition, agri-environmental agreements attached to subsidies require land to be maintained in agricultural condition. Rewilding practitioners found that the UK Rural Payments Agency's interpretation of the rules on permanent and temporary 'ineligible structures', such as some trees, streams, and ponds, favor simple, unchanging vegetation structures and impede rewilding activities.



An experimental enclosure at the Oostvaardersplassen showing the impact of grazing.

Photo: Jennifer Gooden

Conservation land designations: Adopted in 1979 and 1992, the Birds Directive and Habitats Directive form the cornerstone of European nature protection. The Birds Directive bans activities that directly threaten birds, places restrictions on hunting, outlaws non-selective and large-scale killing of birds, and promotes research. The Habitats Directive protects over 1,000 endangered and vulnerable species and 200 habitat types of European importance. Designated sites generally require land to be held in "favorable conservation status" for the features for which it is designated.

Practitioners from nearly every site, with most emphasis from those in the Netherlands, described European conservation designations and their national equivalents as barriers to rewilding, describing situations in which sites designated for the protection of particular species or habitats have necessitated halting ecological succession with conservation management. For example, if a site is designated an SPA under the Birds Directive for its habitat for spoonbills, management actions must be organized around the continued provision of shallow wetlands, even though rewilding prioritises ecosystem function over maintenance of specific species assemblages. In general, interviewees understood the conflict to be not with EU directives, but with the way those directives were adopted in national law.

Countryside access: In England and Wales, the Countryside and Rights of Way Act of 2000 and the Commons Act of 2006 grant public access along footpaths and rights of way on private property, as well as broad public access to areas of open land. In Scotland, the Land Reform Act of 2003 extends public access rights to most parks, open spaces, and inland water. While practitioners generally view public access to nature as positive, many sites identified tension between rewilding activities and the activities of people. This trend was strong in England and Scotland.

In some cases, conflict is due to differing underlying goals, such as concern that reintroducing native carnivores, which requires fencing, may conflict with public access legislation.

Rights of common: In the UK, the Countryside and Rights of Way Act (2000), Commons Act (2006), and Crofting Reform Act (2010) subject some privately owned land to rights of common, meaning that one or more people in addition to the property owner are entitled to utilise the land. Management of common land must take into account the interests of both landowners and commoners. Additionally, in England, land tenancies granted before 1984 carry statutory succession rights that pass to relatives upon the tenant's death or retirement. Two tenancies by succession can be granted, so it is possible for the tenant's family to work the holding for three generations with no changes to terms, despite advances in knowledge of ecology and best management practices.

Practitioners at sites subject to common rights for grazing or crofting said common rights can permit levels of grazing that prevent regeneration of vegetation and halt ecosystem succession. However, in Scotland, interviewees also noted the importance of crofting in the context of Scottish history. Its significance to culture was such that rewilding practitioners would not advocate for changes to crofters' rights but instead emphasise the importance of landowners and crofters working cooperatively.

Zoo regulations: The Zoo Directive (1999) was legislated by the European Council to protect wild fauna and preserve biodiversity. The directive defines a zoo as a permanent establishment where live animals are kept on public display for seven days per year or more. Rewilding projects seeking to reintroduce extirpated animals in enclosures can be defined as zoos and therefore be subject to Zoo Directive requirements. While member states have the discretion to exempt entities from the requirements of the directive if they do not display a significant number of animals to the public, zoo regulations were particularly strong barriers at sites under private ownership and sites with an interest in livestock de-domestication.

If a project is subjected to zoo regulations, management must keep animals in a manner that meets their needs, ensuring the preservation of different species (for example, by providing species-specific enclosures and suitable veterinary care), preventing animals from escaping, and preventing intrusion of outside pests.

Regulations may prevent herbivores and carnivores from being enclosed together; therefore, if a perimeter fence is interpreted as an enclosure, even if it is very large by zoo standards, then species may have to be segregated in a way that is counter to predator-prey interaction, which is a goal of many rewilding sites.

Animal welfare: Several legislative instruments govern animal welfare, the most significant to rewilding being the 1976 European Convention for the Protection of Animals Kept for Farming Purposes. Animal welfare standards include, among others, freedom from hunger and thirst; freedom from discomfort, pain, injury, and disease; freedom to express normal behavior; and freedom from fear and distress.

Regulations intended for farmed animals are of particular concern at sites working on de-domestication, as there is a question as to whether hardy herbivores like Heck cattle and konik horses should be treated as wildlife or livestock.

Wild land policy: The absence of a national wild lands policy emerged as a barrier in every country in the study. Scotland's National Planning Framework of 2014 states that wild land is a nationally important asset that merits strong protection, but this was not seen as sufficient to address the limitations of other policy.

Implementation: Rewilding practitioners found the greatest regulatory hindrances to be associated with the way in which government policies were implemented. The unpredictability of government agencies due to changes in ministers and parties, particularly regarding their stances on rewilding, was common across study sites in all countries. In addition, rewilding sites experienced friction with the discrepancy between timelines for government funding and the time needed to allow ecological processes to operate. These barriers are not unique to rewilding, but collectively they were more prominent than any single policy barrier, which may be symptomatic of rewilding's politicisation.

Policy implications

This research identifies regulatory barriers as a first step toward creating an institutional environment that is supportive of rewilding. In addition, while organizations such as Rewilding Europe pursue change at the EU level, this research indicates there is potential for national governments to take proactive steps toward enabling good rewilding practice.

Interviews from the study suggested the following main policy implications which predated Brexit:

The Birds Directive and the Habitats Directive could be implemented in ways that are more sympathetic to rewilding. Most interviewees reported that barriers from conservation land designations operated at the national level, due to EU legislation being implemented more rigidly and prescriptively than necessary.

Rewilding would benefit from modification to biohazard regulations concerning fallen stock. Like conservation designations, this change could be implemented at the national level, as flexibility appears to already be included in EU legislation.

Establishment of national wild land policies could facilitate rewilding. Currently, lack of such policies leaves rewilding in politically uncharted territory, subject to multiple regulatory forces. Wild land policy would not only serve the practical purpose of setting national goals and providing resources, it would also give legitimacy to the concept of rewilding.

Results of this study indicate that policy barriers originating from a variety of legislative measures present a real challenge for rewilding practitioners. Yet study

participants recognized that existing policy embeds its own history and purpose, with objectives that rewilding advocates should take into consideration as they develop a policy agenda. The most fruitful path forward will reconcile rewilding's policy aims with those of existing policy to seek mutually acceptable solutions.

References

1. Boitani, L. & Sutherland, W. J. (2015). Conservation in Europe as a model for emerging conservation issues globally. *Conservation Biology*, 29(4), 975-977.
2. Lowndes, V., Marsh, D., & Stoker, G. (2010). The institutional approach. In *Theory and Methods in Political Science* (3rd ed.). (pp. 60-79). Houndmills, Basingstoke, Hampshire.
3. Weber, L. (1997). Some reflections on barriers to the efficient use of energy. *Energy Policy*, 25(10), 833-835.
4. York, C. M., Blumstein, C., Krieg, B., & Schipper, L. (1978). *Bibliography on Institutional Barriers to Energy Conservation*.

Jennifer Gooden is a DPhil candidate at the School of Geography and the Environment, University of Oxford. jennifer.gooden@ouce.ox.ac.uk

Saplings emerge through the grasses at a Trees for Life planting site.
Photo: Jennifer Gooden



Wilder visions, wilder lives, wilder nature?

Challenges for a new rewilding charity

As the new charity Rewilding Britain moves into its second year of operation, this article explores some of the challenges faced by the rewilding movement in Britain, and considers how they might be overcome.

HELEN MEECH

Britain is one of the most ecologically depleted nations on earth. We have lost all our large carnivores and most of our large herbivores. While the average European forest cover is 37%, ours is just 12%. Our ecosystems have almost ceased to function. Because of the absence of trees and loss of soil, our watersheds no longer hold back water, with rainfall flashing off the hills and causing flooding downstream. Species are declining, and space for nature is limited to small reserves that are disconnected from each other and the natural systems that should support them.

Rewilding offers a chance to reverse that: a chance to bring nature back to life and restore the living systems on which we all depend. A chance to work with communities to restore to parts of Britain the wonder and enchantment of wild nature; to allow magnificent lost creatures to live here once more; and to provide people with some of the rich and raw experiences of which we have been deprived.

About Rewilding Britain

Rewilding Britain was set up to promote the large scale restoration of ecosystems in Britain, on land and at sea. We believe it is not enough merely to try to preserve tiny fragments of our wildlife. Meaningful conservation must involve restoring natural processes and re-establishing missing species. The animals we lack, such as beavers, boar, lynx, wolves, large tuna, pelicans, cranes and storks, are not just ornaments of the ecosystem - they have a role as ecosystem engineers and are essential to an effectively functioning environment.

We want natural ecological processes and key species to return to at least one million hectares of Britain's land and 30% of our territorial waters over the next 100 years.

By 2030 we would like to see 300,000 hectares of core land areas and three marine areas established where nature is starting to take care of itself and key species are starting to become re-established.