

# ***Is rewilding destroying the remaining naturalness of the Scottish Highlands?***

**James H.C. Fenton**

## **Abstract**

In the Scottish Highlands most rewilders believe that the landscape should have significantly more trees so that 'rewilding' becomes synonymous with 'reforesting'. This paper argues that the evidence suggests that open moorland would be expected to be the dominant natural vegetation type at this stage of the post-glacial era. Because rewilding is about maintaining or recreating the natural ecological characteristics of a locality, then adding trees to the landscape is in fact reducing the remaining wildness/naturalness of the Highlands.

*Keywords: Scottish Highlands, naturalness, open moorland, deer, trees,rewilding*

## **Introduction**

This paper identifies the characteristics of a rewilding approach and then goes on to identify what such an approach would mean in practice for the Highlands of Scotland. This is a large subject necessitating knowledge of several disciplines and can only be discussed in outline here. Note that the paper is referring to the traditionally unenclosed land, not the heavily managed land adjacent to settlements (inbye land). The whole topic is discussed in more detail in Fenton (2008, 2011, 2014) where references can be found. More recent references are included below.

## **Characteristics of a rewilding approach**

### **Aim**

1. To retain areas of the planet where nature is in charge, a given locality reflecting the area's natural ecological characteristics, *i.e.* what we have inherited from nature, the planet's biological diversity. This is Rewilding Europe's (2015) first Guiding Principle.

### **Specifics**

2. The vegetation pattern should reflect the natural characteristics of the locality, the pattern determined by natural processes rather than human intervention.

3. The original indigenous animals are present where the relevant habitat still exists (unless they have become extinct through natural causes).

4. Introduced species are removed where practicable, *i.e.* the retention of the original natural characteristics.

5. A non-prescriptive approach in relation to ecological outcomes (habitat balance, animal populations) with human intervention confined to reintroductions and the removal of alien species.

6. A willingness to be open-minded about the resultant vegetation pattern and species composition, including acceptance of natural extinction and immigration: abandonment of preconceptions and prescriptive outcomes.

## Necessary background knowledge

7. Detailed knowledge of the locality's ecological history, including soil development and the successional stages that have resulted in the current vegetation pattern.
8. Knowledge the long-term dynamics of the main plant communities, *e.g.* woodland regeneration dynamics, peat bog development, natural cycles.
9. Knowledge of the past and current human influence on both the vegetation pattern and the animal composition.
10. Knowledge of grazing impact and predator/prey interactions is useful but not essential (we wait and see what happens, although the knowledge can help in modifying any preconceptions).



**Figure 1. Moorland in Wester Ross. Woodland is confined to streamsid es and steep slopes. It is the author's view that this represents one of the most natural landscape types remaining in Europe, isolated woodland being a key biodiversity characteristic of the area.**

### **For the Scottish Highlands, the above knowledge is telling us:**

Leaching, podsolization, the development of an iron pan and peat development are natural processes, resulting in lowered soil fertility over time.

The temperate climate, with lack of winter snow-cover in most years, results in a higher herbivore carrying capacity than in most boreal climates.

Most decline in woodland cover has been due to natural processes: in the post-glacial area (Holocene), a period of woodland expansion has been followed by a period of decline; this also occurred in areas of infertile soils in previous interglacials (Svenning, 2002). The dominant

natural vegetation would be expected to comprise the moorland plant communities of heath, grassland and bog (Figure 1).

With woodland decline, there would be expected also to be a decline in the obligate woodland fauna, perhaps to extinction.

Natural woodland decline occurred throughout the period when wolves were present, indicating that their reintroduction is unlikely to reverse the trend of natural woodland loss (although there might be local impacts). Warren (2002) concludes that the presence of wolves is unlikely to significantly reduce numbers of red deer.

Most of the Highlands are ecologically unsuitable for thorny scrub (soils too acid) so that the Vera model of woodland regeneration cannot hold (Vera, 2000). It does hold occasionally, though, in deep heather for sessile oak *Quercus petraea* and Scots pine *Pinus sylvestris*. The model is applicable, however, in the southwest Highlands (Argyll) where the soils are richer and thorny scrub occurs: here there is currently natural expansion of native woodland cover (Figure 2).



**Figure 2: Bramble *Rubus fruticosus* colonising grazed grassland in Argyll, with later stage scrub visible in the background. This illustrates the Vera model, where thorny shrubs deter herbivores and allow woodland regeneration. Other thorny shrubs in the area include sloe *Prunus spinosa* and hawthorn *Crataegus monogyna*.**

The ecological carrying capacity of the vegetation for red deer is of the order of 15-18 deer/sq km (Pemberton & Kruuk, 2015; Milner, Alexander & Griffin, 2002) which is greater than that necessary to allow for woodland regeneration.

The number of red deer may have increased in some areas in recent years, but at the same time the number of sheep has gone down: hence the overall grazing level may not have changed much (more research is needed on this).

The level of grazing on neighbouring plant communities can vary by an order of magnitude, *i.e.* some are heavily grazed while others are virtually ungrazed. In summer there is an excess of forage availability in the Highlands. The concept of ‘overgrazing’ is meaningless in natural systems: animals die when there is no forage available. Forage availability in the limiting

season (winter in Scotland) is the primary determinant of herbivore populations. ‘Overgrazing’ has meaning in relation to a prescriptive habitat output, but such a prescriptive approach is not in keeping with the principles of rewilding.



**Figure 3: Extract from the Forestry Commission’s Map Viewer (2 July 2015) showing new native woodland schemes (coloured green, purple or blue outline) on what was previously open moorland. This illustrates the continual fragmentation of the moorland landscape. © Crown copyright and database rights 2015. Ordnance Survey Licence No. 100021242, © Getmapping plc.**

Apart from the inbye land, over most of history the uplands have not been managed (with the exception of burning) but only used for hunting and grazing: in other words, humans have modified the natural processes of grazing and burning but have not designed the vegetation pattern. Densities of domestic stock were unlikely to be high over most of history owing to the presence of wolves.

Woodlands had largely disappeared before the arrival of post-Clearance sheep farms, so that woodland decline cannot be put at the door of sheep grazing. The traditional management system, summer shielings (transhumance) involved summer-only cattle grazing, a system that might be expected to encourage tree growth.

The main human impact has probably been the removal of peat rather than the destruction of forest. Large tracts of land at high and mid-altitudes have never been populated, the human

population mainly confined to the coasts, straths and glens, so over most of history human impact here is likely to have been minimal.

Modern intensive grouse more management may increase species diversity, but even without management most areas would naturally be heather-dominant moorland.

There is no evidence that there was ever a climatically-determined tree-line and the concept is perhaps not relevant to upland Scotland.

There is no *a priori* reason why natural ecosystems should be species-rich or diverse. The presence of species-poor ecosystems contributes to global biodiversity.

## **Conclusions relevant to conservation management and rewilding**

It is a reasonable hypothesis to suggest that the great boreal forests fragment naturally on the Atlantic seaboard, and that the resultant open landscape is the key characteristic of Scotland's terrestrial biological diversity. The pattern of moors and peat bogs represents one of the most natural vegetation patterns remaining in Europe.

Increasing the woodland cover is going against the natural ecological trends and reducing the area's biodiversity value.

The current push for rewilding, *sensu* increasing the tree cover (Figure 3), is reducing the remaining naturalness of the area. It is a highly prescriptive approach which takes no account of natural processes and is converting a natural landscape into a cultural/designed landscape. It is destroying the ecological distinctiveness of upland Scotland and contributing to the global homogenisation of landscapes – which goes against the spirit of the European Landscape Convention (Council of Europe, 2000).

The current approach for rewilding is based on an emotional belief that there should be more trees rather than a scientific understanding of the ecology of the area.

In the Scottish Highlands, most rewilders have their own highly prescriptive visions and are reluctant to let nature really be in charge – for the land to be really wild.

At a personal level, I am relaxed as to whether nature will take us to more woodland or less woodland. I am in agreement with the introduction of the wolf (when politically possible), but the fact that the presence of both wolves and deer over ten thousand years did not prevent woodland loss is strong evidence that their reintroduction is unlikely to result in major landscape change.

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Rewilding Europe (2015). The first Guiding Principle is 'The rewilding areas should host complete and naturally functioning ecosystems specific to the region, with the full spectrum of native wildlife typical for the region present'. <http://www.rewildingeurope.com/about/guiding-principles-2/>