

Institution: University of the Highlands and Islands
Unit of Assessment: 17 Geography, Environmental Studies and Archaeology
<p>Title of case study:</p> <p>The impact of conceptualising and modelling wildness on the protection of wild areas in Scotland</p>
<p>1. Summary of the impact</p> <p>Research on modelling wildness has resulted in the development of a wildness mapping tool for Scotland's national parks which provides a basis for supporting decision making relating to planning applications that are potentially detrimental to wildness. The methodologies developed have been adopted by Scottish Natural Heritage to map wildness and wild land across Scotland. In 2013, the Scottish Government proposed that the identified 'core areas of wild land' should be protected through Development Plans and spatial frameworks for onshore wind energy; this proposal is currently out for consultation. These methodologies have also been used to map wildness and identify priority sites in Europe.</p>
<p>2. Underpinning research</p> <p>Underpinning research has included qualitative inquiry to further the understanding of wild land and wildness in Scotland, beginning with a project in 2005-6, funded by Scottish Natural Heritage (SNH). It was led by Dr Robert Mc Morran at the Centre for Mountain Studies (CMS) at Perth College UHI, who began his PhD research at the CMS in 2003 and has been employed as a researcher at the centre since 2005 (part-time) and 2007 (full-time, after completing his PhD). The project explored the socio-economic benefits of wild landscapes, analysed the relevant policy framework and identified opportunities for protecting and enhancing wild land, while maximising the associated benefits. Through the development of criteria for wildness and wild land and the development of a typology of wild landscapes, this work enhanced the conceptual basis for these concepts. A key conclusion was that the benefits attributable to land managed for 'wildness' values are at least equal to those attributable to traditional land management activities¹. The work also recognised the multiple conceptual dimensions of wild land, including perceptual/recreational, ecological and cultural elements².</p> <p>This work identified the need to further define wild land and provided a basis for projects to characterise wildness and spatially delimit wild land in Scotland, using GIS-based techniques to identify the geographical extent and intensity of wildness in the Cairngorms National Park (2008) and Loch Lomond and Trossachs National Park (2010)³. This work was led by Dr Steve Carver at the Wild Land Research Institute (Leeds University), with Dr Robert Mc Morran (CMS), Steve Nutter and Justin Washtell (Wildland Research Institute), Dr Lex Comber (University of Leicester) and Dr Steffen Fritz (International Institute for Applied Systems Analysis, Austria) as co-investigators. This work utilised existing GIS-based multi-criteria evaluation (MCE) and fuzzy mapping methods⁴. These methods were combined with findings from perception studies to develop spatial datasets illustrating the four main attributes that contribute to perceptions of wildness: perceived naturalness of land cover; absence of modern human artefacts; rugged and challenging nature of the terrain; and remoteness. For each national park, the four attribute maps were combined into a single wildness map using MCE/fuzzy mapping methods, which allow the priorities derived from the perception studies to be reflected in the wildness map without the need for deterministic criteria or sharp boundaries that define what is considered wild. The resultant maps quantify and spatially delimit perceptions of wildness across both parks and are being used (together with the resultant in-</p>

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situ wildness mapping tools) to support planning decisions. These methodologies have since been used by SNH to map wildness and wild land nationally (below). They have also provided the basis for further European-level research, including a collaborative project between the Wild land Research Institute and CMS (Robert Mc Morran) reviewing wild land management in Europe⁵ and a project to map wilderness in Europe for the European Environmental Agency (EEA)⁶. In 2012, the European Commission awarded a contract to Alterra Netherlands, the Wildland Research Institute and Pan Parks to develop a European 'Wilderness Register', based on existing mapping methodologies and development of a priority sites database.

3. References to the research (indicative maximum of six references)

¹Mc Morran, R., Price, M.F. and McVittie, A. (2006). A review of the benefits and opportunities attributed to Scotland's landscapes of wild character. Scottish Natural Heritage Commissioned Report No. 194 (ROAME No. F04NC18). (Reviewed by project steering group).

²*Mc Morran, R., Price, M.F. and Warren, C. (2008). The call of different wilds: The importance of definition and perception in protecting and managing Scottish wild landscapes. *Journal of Environmental Planning and Management* **51** (2) 177-199.

³*Carver, S.J., Comber, A., Mc Morran, R. and Nutter, S. (2012) A GIS model for mapping spatial patterns and distribution of wild land in Scotland, *Landscape and Urban Planning*, 104(3-4), 395-409.

⁴*Comber, A., Carver, S., Fritz, S., Mc Morran, R. Washtell, J. and Fisher, P. (2009). Different methods, different wilds: Evaluating alternative mappings of wildness using fuzzy MCE. *Computers, Environment and Urban Systems*, **34**, 142-152.

⁵Fisher, M., Carver, S., Kun, Z, Mc Morran, R., Arrell, K. and Mitchell, G. (2010) Review of the status and conservation of wild land in Europe for the Scottish Government. <http://www.scotland.gov.uk/Resource/Doc/1051/0109251.pdf> (Reviewed by project steering group).

⁶Carver, S. (2010). Mountains and wilderness. In European Environment Agency (2010). Europe's ecological backbone: recognising the true value of our mountains. European Environment Agency, Copenhagen: 192-201. (Peer reviewed within EEA).

4. Details of the impact (indicative maximum 750 words)

The research described above has provided a robust conceptual and methodological basis for defining the inherently complex and subjective concepts of wildness and wild land. This has led to Scotland being the first country in Europe to map wildness and wild land at such a high level of detail and accuracy, which has had three key impacts: i) providing a stronger basis for decision making relating to planning applications in Scotland's national parks ii) providing a basis for public debate and further research on wildness and wild land, and their importance as national assets in Scotland; and iii) facilitating greater recognition of wild land and wildness in national policy, providing a firm basis for greater protection of wild land through national planning policy.

In 2008-2010, the development of wildness maps and a wildness mapping tool in Scotland's two national parks provided an underpinning framework for defining and protecting wildness and wild land^a. The protection of wildness is a core objective of both national parks. National park staff can now use the wildness mapping tool to assess the overall impact of any development proposal on wildness, by running the model with the proposed development inserted. The development of supplementary planning guidance^b on wildness in the

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Cairngorms National Park based on the maps has provided a clear framework to inform planning decisions related to development proposals which may impact on an area's wildness.

To inform the mapping process and understanding (and appreciation) for wild land in Scotland, public perception studies were also commissioned by the national parks and SNH in parallel with the mapping studies. These demonstrated strong support for wild land conservation among the Scottish public: from a sample of 1,304, 91% agreed that it was important for Scotland to have wild places and 70% considered it very important^c. This is reflected in Scottish Government and SNH policies^d, which state that the unique landscape values of wild land should be protected from intrusive development. Defining and mapping wild land contributes to the protection of landscape values which are important both to local communities and to the national sense of Scottish identity, as well as for high-value recreational experiences and to underpin tourism. Wildness and wild land mapping also allows for the identification of areas suitable for large-scale ecological restoration and zoning (in terms of planning guidance, visitor management etc.) based on their relative wildness. Wild land conservation also delivers benefits in terms of protecting ecosystem services, such as carbon sequestration, freshwater resources, and biodiversity^e.

This research on wild land and wildness was an important factor in influencing the Scottish Government to commission, in 2010, a report on how wild land is managed in Europe^e. This work included the development of wildness maps for Europe, which were also published in a report by the European Environment Agency in 2010^f and presented in Prague in 2011 at the European Commission's Conference on Wilderness and Large Natural Habitat Areas (part of a coordinated strategy to protect wilderness and wild land areas in Europe and linked to the 2011 EU Resolution on Wilderness)^g. Further work to develop a 'Wilderness Register' (utilising the wildness maps) for Europe has also been undertaken. The identification of high-quality wilderness sites offers the potential for subsequent prioritisation of sites where there is a requirement for protection and for linking wilderness protection with sustainable tourism, following the Pan Parks wilderness tourism model^h.

The successful development of wildness mapping in Scotland's national parks provided the basis for mapping wildness across Scotlandⁱ. This process of national wildness mapping was completed by SNH in 2012; in a second work phase, SNH identified 43 delineated 'core areas of wild land' by analysing the scores of relative wildness using a statistical technique known as 'Jenks natural breaks analysis' and identifying a minimum threshold size of area (2013). A third phase of work used informed judgement to confirm the selection of areas of wild land character encompassing the largest contiguous blocks of land with the highest levels of wildness. In April 2013, the Scottish Government proposed that the identified 'core areas of wild land' should be protected through Development Plans and spatial frameworks for onshore wind. Following consultation on this proposal, through the national consultation on the National Planning Framework (NPF) 3 and draft Scottish Planning Policy (which closed in July 2013), the Scottish Government is currently deciding on how exactly wildness and wild land will be incorporated within the NPF in 2014. The wildness mapping work was presented at the 10th World Wilderness Congress in October 2013 in conjunction with a conference resolution calling on the Scottish Government to protect wild land.

5. Sources to corroborate the impact (indicative maximum of 10 references)

^aHeritage Manager, Cairngorms National Park, and Landscape Manager, Loch Lomond and Trossachs National Park (End Users) (letter of support available)

See also:

Carver, S., Comber, L., Fritz, S., Mc Morran, R., Taylor, S. and Washtell, J. (2008) Wildness

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Study in the Cairngorms National Park. University of Leeds.

Carver, S., Comber, L., Mc Morran, R., Nutter, S. And Washtell, J. (2011) Wildness study in the Loch Lomond and Trossachs National Park, University of Leeds.

An online beginners guide to wildness is available online at:

<http://www.lochlomond-trossachs.org/looking-after/wildness-study-in-the-loch-lomond-the-trossachs-national-park-2011/menu-id-414.html>

^bCairngorms National Park Supplementary Planning Guidance on Wildness (based on the mapping work): Available online at:

<http://www.cairngorms.co.uk/resource/docs/boardpapers/22072011/CNPA.Paper.4440.Planning%20Committee.Paper.8.-.Appe.pdf>

^cMarket Research Partners, Edinburgh. (2008). Public Perceptions of Wild Places and Landscapes in Scotland. Commissioned Report No.291(ROAME No. F06NC03).

<http://www.snh.gov.uk/docs/B450684.pdf>

^dThe current respective relevant policies are the National Planning Framework for Scotland (NPF 2, 2009, Paragraph 99), Scottish Planning Policy (2010, Paragraph 128) and Scottish Natural Heritage's Policy Statement 02/03 (2002) Wildness in Scotland's Countryside. A full explanation of each and links to these documents is available at:

<http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-policy-and-guidance/wild-land/wild-land-policy/>

^eFisher, M., Carver, S., Kun, Z, Mc Morran, R., Arrell, K. and Mitchell, G. (2010), Review of status and conservation of wild land in Europe. Scottish Government: available at

<http://www.scotland.gov.uk/Resource/Doc/1051/0109251.pdf>

^fWilderness Quality Index maps for Europe (as developed for the European Environmental Agency can also be viewed here: <http://www.eea.europa.eu/data-and-maps/figures/wilderness-quality-index>

^gEuropean Parliament Resolution of 3 February 2009 on wilderness in Europe (2008/2210 (INI)). Available online: <http://ec.europa.eu/environment/nature/natura2000/wilderness/>

^hThe Pan Parks initiative (a network of protected wilderness areas) see:

<http://www.panparks.org>

ⁱPolicy and Advice Manager, Scottish Natural Heritage (Policy lead and coordinating national wildness mapping in SNH) (letter of support available)

A letter of support from the Director of the Wild Land Research Institute, Leeds University (Lead investigator on wildness mapping projects) is available.