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Byg, A, Martin-Ortega, J, Glenk, K et al. (1 more author) (2017) Conservation in the face of ambivalence – public perceptions of peatlands as 'the good, the bad and the ugly'. Biological Conservation, 206. pp. 181-189. ISSN 0006-3207

https://doi.org/10.1016/j.biocon.2016.12.022

Conservation in the face of ambivalence – public perceptions of peatlands as 'the good, the bad and the ugly '

Abstract

Most conservation efforts today recognise the need to involve the public if conservation is to succeed in the long-term. A common approach has been to try to educate the public on why they should care. However, information campaigns are often not effective in changing opinions, let alone behaviour. In this paper, we try establishing the basis for alternative approaches based on understanding people's motivations, perceptions and relationship with nature. Using focus groups, we look at the case of peatlands in Scotland, as an example of an ecosystem which is currently the focus of many conservation and restoration initiatives while seen as 'problematic' in the sense that those advocating its conservation assume that the general public does not care about peatlands. Our results show that perceptions of peatlands are ambivalent and many-facetted, and that they can be understood, metaphorically speaking, as good, bad and ugly at the same time: they can be seen as bleak wastelands; beautiful, wild nature and cultural landscape. The multiple and ambivalent views of ecosystems such as peatlands seem not stem necessarily from lack of knowledge, but to be linked to biophysical characteristics, history, trade-offs between different uses and differences in personal relationships with nature. To ensure the long-term success of conservation, it is vital to understand and manage the public's different and ambivalent views about and attitudes towards landscapes of a greater or lesser degree of wilderness. Many practitioners have now come to accept and manage the fact that there is uncertainty in relation to the outcomes of the biophysical processes underpinning ecosystem restoration. It is now necessary to acknowledge human ambivalence and to find mechanisms for dealing with it. This should become one of the new pillars of conservation practice.

Key words: nature perceptions, restoration, trade-offs, cultural landscapes, wilderness

1. Introduction

Most conservation efforts today recognise the need to take perceptions and values of a range of stakeholders into account if conservation is to succeed in the long term (Harrison and Burgess 2000; Linnell et al. 2015; Mace 2011; Robinson 2011). This includes those who live in or close to conservation areas, who will often bear costs in terms of restricted use and access, but also the wider public, who shares the cost for publicly funded conservation. In the case of charismatic mega-fauna it may be relatively easy to attract widespread support for conservation, although even in these cases there may be conflicts and different interpretations of how species and ecosystems should be managed (e.g., Fischer and Van der Wal 2007; Patterson et al. 2003). For less iconic fauna, flora and ecosystems it may be more difficult to garner the support of the public. A common approach from conservation organisations and governments has been to try to educate the public on why they should care about for example rare moths and herbs (Buijs et al. 2008). However, information campaigns are often not effective in changing opinions, let alone behaviour due to the weak links between knowledge, attitudes and behaviour and a lack of understanding of the social representations of nature (Buijs et al. 2008; Heberlein 2012). How and to what degree information is taken on board depends for example on pre-existing beliefs and values (Groffman et al. 2010; Nisbet and Scheufele 2009). A more fruitful approach may therefore be to look at the reasons why people do or do not support certain conservation projects or approaches and how this is related to their interactions with the environment. This includes perspectives on the appropriate use of a place or ecosystem, and views on how perceived benefits and dis-benefits associated with an ecosystem and

its different uses have been and will be affected by human use (Bennett 2016; Cheng et al. 2003). Studies on farmers' attitudes to agri-environmental schemes have for example shown the many-facetted reasons for farmers' resistance to such schemes (Harrison et al. 1998; McHenry 1997). These include different understandings of nature, conservation and humans' relationship with nature and of the effects of their own actions as well as reactions against being portrayed as ignorant, and feeling under pressure from an increasingly urban society (Harrison et al. 1998; McHenry 1997). Here we look at the case of peatlands in Scotland, as an example of an ecosystem which is currently the focus of many conservation and restoration initiatives, and which is seen as 'problematic' in the sense that those advocating its conservation assume that the general public does not care about peatlands (Scottish Natural Heritage 2001, 2015).

Globally, peatlands cover around 3% of the earth's land surface, hold around 10% of the world's freshwater and 33% of the world's terrestrial carbon (Joosten and Clark 2002). Around 9-15% of Europe's peatland areas are found in the UK of which more than 77% are located in Scotland (Bain et al. 2011; Bruneau and Johnson 2014). Scottish peatlands mainly consist of blanket bog, which is a globally rare habitat type (Bruneau and Johnson 2014). Perceptions of peatlands have changed over time with changing uses (Collier 2014). Archaeological finds indicate that peatlands in Europe used to be sites of ritual importance as well as being sources of food and materials (McDermott 2007; Van de Noort and O'Sullivan 2007). In the more recent past, peatlands in Scotland were mainly seen as either a source of peat or as wastelands to be converted to other productive uses such as forestry or agriculture (Johnston and Soulsby 2000; Rawlins and Morris 2010; Smout 1997; Van de Noort and O'Sullivan 2007). As a consequence a large portion of Scottish peatlands has been degraded to some extent leading to biodiversity loss, release of greenhouse gases and problems with soil erosion and water regulation (Bain et al. 2011).

Today, experts view peatlands as important providers of ecosystem services such as carbon sequestration, biodiversity, water regulation, preservation of natural and human history, sense of place, fuel, grazing, and field sports (Bain et al. 2011). Conservation of peatlands is advocated on the basis of these services, especially regulating and supporting services (carbon sequestration, water regulation and biodiversity)(Bain et al. 2011; Evans et al. 2014) and is reflected in international policies and agreements such as the RAMSAR convention and EU Habitats Directive, and in national policies in countries such as Scotland. To win the public's support for peatland restoration, information materials seek to convey the many benefits of peatlands, including the use of the peat itself even though this is seen as one of the causes of degradation (Whitfield et al. 2011).

However, little is known about what peatlands mean to people today (with a few notable exceptions such as e.g. Collier and Scott 2010; Reed and Kenter 2014), especially beyond their direct use for economic activity, and how people view conservation and restoration efforts. The few existing studies have shown that both cultural and provisioning ecosystem services are important (Collier and Scott 2010; Collier and Scott 2009; Reed and Kenter 2014), but that existing trade-offs between different types of uses may not be acknowledged (Bullock and Collier 2011). While cultural ecosystem services are often defined as a category of their own comprising 'immaterial benefits and services' provided by ecosystems, we here use a broader definition where we include cultural significance of e.g. provisioning services and material benefits such as income from e.g. recreation businesses. In addition, culturally shaped values are essential in defining what are regarded as services or dis-services, and are therefore key to perceptions and attitudes towards management and conservation of ecosystems.

In this study we investigate present day perceptions of peatlands in two locations in Scotland including the views of people who live or work in peatlands, as well as the views of those who do not. We argue that support of both groups is important if conservation is to succeed in the long-term, and that it is necessary to better understand their views of peatlands. This can help to

understand support or resistance to conservation and particular management interventions, tailor communication material and identify common ground as a first step to resolve conflicts (Fischer and Van der Wal 2007; Patterson et al. 2003). To gain a better understanding of how people perceive peatlands we conducted qualitative research focusing on

- the range of uses, benefits, dis-benefits, problems or conflicts people recognise in relation to peatlands,
- people's perceptions of the consequences of peatland degradation and of peatland restoration

The study took the form of three focus groups, two in an urban setting far from larger peatland areas, and one in a rural location in a peatland dominated landscape. The results help us to identify barriers which need to be overcome, in order for restoration and conservation of ecosystems such as peatlands to be successful.

2. Peatlands in Scotland

Peatlands can be defined in several ways, and classified according to geographical location, whether they are actively forming peat at present or not, and the different types of vegetation associated with them (Bruneau and Johnson 2014). General characteristics of peatlands include that they are waterlogged, nutrient poor and that the soil consists of an accumulation of partly decayed vegetation (peat) with great water holding capacity.

Peatlands are estimated to cover more than 20% of Scotland's land surface (Bruneau and Johnson 2014). Most peatlands are located in the western and northern parts of Scotland and continue to be used in a number of ways. In some rural peatland areas, peat is still a source of fuel that is extracted and burned by local people to heat their homes. Peatlands are also used for grazing (mainly sheep), although the economic importance of these local uses has declined. Most people in Scotland do not currently live close to areas that are dominated by peatlands and their experiences with peatlands are more likely to consist of recreational use in the form of walking or use of products such as peat-based gardening compost or whisky. Other uses include field sports (shooting and stalking), which often entail some drainage of the land and burning to create improved feeding conditions for game. If the land is drained or burned, this typically implies that peat forming processes are disrupted and that existing peat may be at risk of erosion and loss through decomposition (Evans et al. 2014).

Perceptions of different uses of peatlands today need to be seen against the backdrop of historical events and patterns of land ownership in Scotland. The areas most rich in peatland are areas with a violent history of conflict between estate owners and tenant farmers who were evicted in large numbers in the 18th and 19th century to make room for extensive sheep farming (Smout 2000). Despite land reforms in recent years, land ownership continues to be very unequally distributed with a large proportion of the land being owned by a small number of individuals, including many absentee landowners. During the 20th century, large areas of peatlands were afforested with conifer plantations. This was partly done by the Forestry Commission (the UK agency responsible for forests), and partly by (mostly non-local) private investors attracted by lucrative tax arrangements. However, in the 1980's this practice was largely stopped due to increasingly vocal opposition from conservationists (Smout 1997). Some peatlands have also been used as the location for wind farms or have been converted to built-up areas (Bruneau and Johnson 2014).

While efforts to transform peatlands into productive uses such as agriculture and forestry dominated until well into the 20th century, nowadays Scottish government and environmental interest groups emphasise the need to preserve and restore peatlands. No exact data are available

on the status of peatlands in Scotland outside of protected areas, but it is estimated that only around 18% of all the UK's blanket bogs are in a natural or near-natural ecological condition (Littlewood et al. 2010). These figures are expected to change towards more peatlands being in bad or intermediate conditions if no restoration action is taken. Causes of deterioration include grazing, afforestation, burning, drainage as well as climate change (Bain et al. 2011; Bruneau and Johnson 2014).

To promote the restoration and conservation of Scottish peatlands, a National Peatland Plan has been developed (Scottish Natural Heritage 2015) and funds have been set aside for restoration[1]. While the importance of land owners is emphasised it is also recognised that peatland restoration needs public support to succeed. The public is generally believed to hold negative attitudes towards peatlands perceiving them as bleak and boring (Scottish Natural Heritage 2001, 2015). Consequently, public attitudes are seen as one of the challenges that need to be addressed, and awareness raising and education are advocated to change people's attitudes. Accordingly, part of the National Peatland Plan's vision is to make sure that peatlands are 'no longer seen just as special interest habitats' (Scottish Natural Heritage 2015, p.4). The means to do so are 'to demonstrate and communicate the wider public benefits of healthy peatland landscapes and peatland restoration' (Scottish Natural Heritage 2015, p.6).

3. Study area

In order to explore public perceptions of peatlands and to capture a variety of views, we conducted three focus groups with members of the general public in two locations in Scotland: one on the Isle of Lewis and two in the city of Aberdeen. As explained, the two locations were chosen due to their contrasting characteristics in relation to peatlands and the different relationships and experiences that we assumed people in these two areas would have with peatlands.

The Isle of Lewis constitutes the northern part of the Outer Hebrides, off the west-coast of Scotland, and consists to a large extent of blanket bogs. The Isle of Lewis was chosen as a rural peat area where peatlands are still being actively used for domestic extraction of peat and grazing, although these uses are less widespread nowadays compared to the past.

Aberdeen is located on the east coast of Scotland, and was chosen as an urban, non-peat area where most people have limited personal experiences with peatlands and these are based mainly on recreational activities such as hill walking. Although small pockets of lowland peatland areas can be found in the surrounding rural areas, these are not conspicuous elements of the landscape. Larger areas of upland peatbogs can be found a few hours' drive inland.

4. Methods

Each focus group lasted around 3 hours. They were advertised locally using social media, posters in public places and word of mouth. Participants were provided with a small monetary incentive presented as compensation for travelling to participate. The focus groups in Aberdeen were held in October and November 2014, while the focus group in Lewis was held in July 2015[2].

[1] http://www.snh.gov.uk/climate-change/taking-action/carbon-management/peatland-action/; http://news.scotland.gov.uk/News/Peatland-action-underway-2006.aspx

[2] The focus groups were held within a year after the referendum on Scotland's independence where land ownership and use were important issues. The discussions on the use and management of peatlands may thus

In Aberdeen, 23 participants took part in the first focus group (9 men, 14 women, ages ranging from early 20's to around 70), and 21 of these (8 men, 13 women) also took part in the second focus group[3]. They came from a variety of professional and personal backgrounds, but apart from two people, they did not have any direct experience of using peatlands (other than as the setting for recreational activities such as hill walking) or living in peatland areas. In Lewis, the focus group was attended by 14 participants (6 men, 8 women, ages ranging from around 30 to 70). Participants represented a mix of different background, including three crofters but also several people who were not native to Lewis and had only moved there as adults. The main purpose of qualitative research as applied here is not to arrive at generalizations but to understand meanings in their context (Babbie 2005), and hence these groups were not meant to be representative of Scotland's population. However, the participants in both areas included a wide spectrum in terms of gender, age and socio-economic background, and reported varying reasons for wanting to attend the focus groups (from a general interest in the environment and outdoor recreation to being offered some food at the workshop or "having nothing better to do that day", etc.).

The focus groups were organized using a combination of different types of activities, including break-out groups, plenary sessions and carousel activities, so that every participant had sufficient opportunity to express his/her views and interact with larger and smaller sections of the overall group. Four expert facilitators managed the focus groups, allowing for three break-out groups individually managed, with an additional facilitator monitoring time, participation and other logistical aspects.

The topics covered in the two locations were the same, although individual exercises varied to allow incorporating experiences from the first focus group in the subsequent ones and to take the different levels of knowledge and experience of the participants in the two locations into account (see the supplementary material for the activities carried in each area). The main topics covered in the focus groups were

- associations, experiences and memories related to peatlands;
- uses, activities and 'good things' associated with peatlands;
- conflicts and negative or 'bad things' associated with peatlands;
- peatland degradation, restoration and management.

While we were building on concepts of ecosystem services (and dis-services), we chose to use everyday language in the focus groups. While acknowledging the importance of terminological debates (e.g. distinction between ecosystem services and benefits, Martin-Ortega et al. 2015) we do not enter into these discussions here. During discussions, notes were taken on a flip chart placed so that participants could see what was written down and could clarify any mistakes or misrepresentations. The materials produced during the focus group and notes taken by facilitators were transcribed and entered into qualitative data analysis software (Nvivo). The documents were coded using a grounded approach (Corbin and Strauss 2008; Glaser and Strauss 1967). This implies carefully going over the material several times to identify recurrent themes or topics which emerge from the data themselves rather than on the basis of pre-defined topics and to include insights into

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have been influenced by these recent events. However, none of the participants made explicit references to the issue of independence in the discussions.

[3] Two focus groups were held in Aberdeen to facilitate the overall research design. The first focus group gathered information on people's general perceptions of peatlands and tested the terminology used in the rest of the process. In the second focus group additional aspects were addressed mainly focusing on management and restoration. It cannot be ruled out that some degree of social learning for those participants attending both might have occurred and that views towards conservation of peatlands were more positive as a result. On the Isle of Lewis, exercises from both the previous focus groups were combined into one session.

further data gathering. All the parts of a text or other document related to a particular theme or 'code' are then marked as such. In subsequent rounds of going over the material, codes were refined further, for example by identifying sub-themes within existing themes or codes.

5. Results

Across the topics and sites, different narratives, attitudes and ambivalences emerged. These are summarised in the following while details on the uses, benefits, dis-benefits, characteristics of peatlands in different ecological status and criteria for the selection of potential restoration areas as reported by focus groups participants can be found in Tables 1-4. The information reported in these tables has been used for the development of the different narratives summarised in Figure 1.

5.1 Peatland narratives, attitudes and ambivalence

While the views of individual participants contained many nuances, some common attitudes or ways of viewing peatlands emerged from the responses. Based on these, we identified four frames, which emerge from the intersection of two sets of dichotomies (the two axes in Figure 1). The first dichotomy relates to peatlands viewed as wilderness versus anthropogenic landscapes (vertical axis). Within each of these views, another dichotomy occurred between seeing this as something positive versus negative (horizontal axis). Wilderness can thus be understood positively as something to be preserved and cherished (for its biodiversity, scenic beauty, etc.), or as something negative with connotations of danger and useless wasteland. Likewise, peatlands as anthropogenic landscape can be seen in a positive light, a historic, cultural landscape which speaks of traditions and human stewardship, or as degraded nature damaged by human activities.

Accordingly, in the following we discern four broad categories to group and discuss aspects of the participants' perceptions of peatlands that emerged during the focus groups (Tables 1-4) : 1) peatlands as wonderful wilderness, 2) peatlands as wastelands (or dangerous wilderness), 3) peatlands as cultural landscape, and 4) peatlands as degraded nature (or anthropogenic wasteland) (Figure 1). The different positions were characterised by differences in emphasis that participants placed on different uses, services, benefits and dis-benefits. The views were not mutually exclusive, and some were strongly linked to each other: Wilderness understood in a positive light (quadrant 1 in figure 1) was often linked to a view of human influenced landscapes as degraded nature (quadrant 4), while wilderness as wasteland (quadrant 2) was often linked to a positive view of landscapes managed by humans (quadrant 4). These paired positions were also found to be related to views about how peatlands should be treated to go from a bad state to a positive state or to maintain an existing positive state (dashed arrows going from quadrant 2 to 3, and from 4 to 1).

These categories are ideal types in the sense that individual participants and their views did not necessarily match a single type. Instead, most people drew on concepts from several or all categories depending on the context. Importantly, it was also evident that there was a lot of ambivalence in the way peatlands were perceived. They can be seen as *good, bad and ugly* at the same time, metaphorically speaking, as nature and culture, and often by the same persons. The different positions or frames were not named as such by the participants, but were identified by the authors based on the participants' use of normative statements, how they described the role of humans and the nature of peatlands, and the context in which different words and views were expressed. Next we present each of these narratives in more depths.

5.2 Peatlands as wonderful wilderness

We found framing of peatlands as valuable wilderness amongst participants in both locations, though most strongly in the non-peat area. We classified words such as “nature”, “wildlife”, “biodiversity”, “peaceful” and “open space” as part of this framing. Participants used these words to describe the importance of preserving wildlife and biodiversity for their own sake, as well as positive experiences of directly experiencing wild places such as peatlands, their beauty and the opportunities these places afforded for adventure. This frame was also evident during discussions about threats and the right use of peatlands. Here, we included statements about the fragility of peatlands, humans as threat, and conservation (of biodiversity, habitat and wildlife), and non-intrusive uses (e.g., research, bird watching, photography, walking, as carbon sink) as the “right” management of peatlands. Perceived benefits that we categorised as part of this frame were “space”, “wilderness”, “natural heritage”, “wildlife”, “habitat and food chain for animals”, “views”, “landscape”, “inspiration for artists”, “health” (physical and mental) and “education”.

5.3 Peatlands as wastelands

The frame of peatlands as “bad and ugly wastelands” corresponds to the position that the general public is often assumed to hold. We found this framing most prevalent amongst the participants in the non-peat area. We categorised negatively loaded words such as “muddy”, “smelly”, “bleak”, “boring”, “dangerous”, “unfortunate”, “wet”, “cold”, “exposed”, and “a problem to be solved” in addition to the word “wasteland” itself as part of this frame. They were used to describe peatlands as exposed and hostile places without any shelter or redeeming features that at best were boring and bothersome and at worst outright dangerous. Examples that we included under this frame were participants’ stories of falling into water filled holes and getting stuck in peat while hiking. We also included statements advocating drainage of peatlands or other uses (e.g. housing developments) as the appropriate use or management to turn peatlands from wastelands into something useful. Amongst the participants in the peat area, there was less reference to peatlands as wastelands, although participants mentioned negative aspects associated with natural elements of peatlands such as getting wet or being bothered by biting midges[4] when performing tasks such as extracting peat, the danger of sheep and machinery getting stuck in the peat, geese causing damage to farmers’ crops, and non-locals getting lost in peatlands. These were stories and accounts of nature as an obstacle that needed to be overcome or at least managed to make peatlands useful. In this frame we included statements that implied a definition of useful from a strongly anthropocentric perspective. The participants in the peat area also drew on the image of peatlands as bleak and boring wastelands when talking about how they thought that outsiders viewed peatlands.

5.4 Peatlands as cultural landscape

We found the frame of peatlands as a cared for, cultural landscape mainly amongst the participants in the peat area who actively used peatlands for peat extraction and grazing. Under this frame we included statements emphasising peatlands as resources for humans in the form of fuel (the peat) and food (from grazing animals) and humans as stewards and care-takers of the land without whom these areas would turn into useless wastelands. We also included statements which emphasised the strong cultural significance of activities such as grazing and peat extraction as an integral part of a unique sense of place, personal identity and community spirit related to peatland use[5]. Likewise, we included statements about under-grazing and abandonment of peat extraction as threats to healthy peatlands. Peatlands as cultural landscapes can be regarded as the flip-side of peatlands as wastelands. Both frames emphasise the need for human management and intervention to transform

[4] Small, biting flies of the genus *Culicoides*, prevalent in the Scottish highlands and islands.

[5] At the same time, participants acknowledged the declining economic and practical significance of these uses illustrating the difficulties inherent in the currently dominant classifications of ecosystem services where these would normally be considered provisioning services and their importance evaluated as such.

peatlands from (natural) wastelands into useful, cultural environments. Participants in the peat area drew on both these frames to emphasise their own role as stewards of the land and to distinguish their relationship with peatlands from that of outsiders (as in the statements about outsiders regarding peatlands as bleak). This was in contrast to the way activities such as peat extraction were described under the framing of peatlands as wonderful wilderness where they were seen as a threat.

5.5 Peatlands as degraded nature

Under the frame of peatlands as degraded nature we included statements about peatlands as "damaged", "lifeless", "inhospitable", "useless", "infertile" and "bleak" places. While some of the terms are the same as in the framing of peatlands as wastelands, the statements were here used in the context of human use and degradation rather than about peatlands in their natural state. Under this frame, we included statements where the focus was on the negative impact of human use, the vulnerable nature of peatlands and balance out of kilter. This frame is hence related to the framing of peatlands as wonderful wilderness. Both these frames are about peatlands as fragile and threatened by humans, but where 'peatlands as wonderful wilderness' focuses on how peatlands should be, 'peatlands as degraded nature' describes the negative outcomes of human exploitation. We found this frame more prevalent amongst the participants in the non-peat area. However, we also identified elements of it amongst the participants in the peat area where it surfaced in comments such as that peatlands should be "allowed to rest" after having been used by humans. For some the framing of peatlands as degraded nature thus also included notions of a natural balance that needed to be restored as well as a sense of moral justice which included nature and humans.

6. Discussion

This study showed the existence of different framings of peatlands as well as ambivalence. Many of the participants thus held apparently contradictory views at the same time. Archaeological and historic sources indicate that ambivalence around peatlands is not new (Rotherham 2012; Van de Noort and O'Sullivan 2007). In pre-history, peatlands in Europe were both sources of materials for everyday life and places where material and human sacrifices took place and other-worldly powers could be contacted through material and human sacrifices (Van de Noort and O'Sullivan 2007). They were also places 'in between' which marked boundaries between different chiefdoms (McDermott 2007). In myths, folklore and literature, peatlands were usually depicted as places of danger where evil creatures dwelled although in some stories these could also be the means by which wrongdoings were punished (Meredith 2002; Rotherham 2012). Some of the present and historic ambivalence may be linked to the ambivalent biophysical characteristics of the peatlands themselves as places that are neither land nor water and hence do not fit into our "normal" categories. Now as in the past, their characteristics influence the potential ways in which people can make use of and interact with them. They offer resources of well as real dangers. Their featureless nature and high water content mean that people can easily lose their way and get stuck, and 'peat eruptions' can have devastating effects similar to landslides (Meredith 2002).

Views of peatlands also differ between people and change over time (Collier and Scott 2009; Johnston and Soulsby 2000). In the UK in the medieval ages and up until the 18th century, local people seem to have regarded peatlands mainly as valuable resources, while outsiders regarded them as wastelands which could only be made useful through drainage and conversion into other, cultivated and thereby cultural lands (Johnston and Soulsby 2000; Smout 1997; Van de Noort and O'Sullivan 2007). Similarly, in our study the people in the peatland area more frequently drew on notions of peatlands as cultural lands while people in the non-peat area drew more heavily on concepts of wonderful wilderness and degraded nature although elements of all views cropped up in both places. Different frames emphasised different uses and benefits (peat extraction, grazing,

community spirit and tradition vs. biodiversity, recreation, scenery, etc.) and included different views on the role of people (stewards vs. threat) and the nature of peatlands (robust vs. fragile).

The multiple frames and ambivalent views of peatlands also seem to reflect more general differences and ambivalences in people's conceptions of nature and the role of humans in relationship to it. 'Nature' and 'wilderness' are thus in themselves ambivalent concepts. For some 'wilderness' denotes positive things such as wonderful wildlife and opportunities for adventure, while for others it denotes danger and for many it can have aspects of both (Arts et al. 2009, 2016; Habron 1998; Koole and Van den Berg 2005). This is also reflected in popular media in films such as 'Into the Wild' (2007) where both these aspects are brought into play.

In addition, people's perceptions and interactions with nature, wilderness and specific ecosystems are influenced by personal experiences and preferences, as well as the cultural, social, political, economic and historic context, amongst others (Bennett 2016; Cheng et al. 2003).The frame of peatlands as 'wonderful wilderness' can hence be traced back to the romantic movement beginning in the 18th century, when wilderness and nature in general came to be imbued with new, positive meanings (Solnit 2000) while the history of the Highland Clearances and unequal land distribution are also likely to influence people's present day interactions and views of peatlands in Scotland. These influences surfaced in the large number of cultural ecosystem services that people mentioned and the importance accorded to them, including cultural aspects of services that are normally considered as provisioning services (i.e. the importance of peat extraction and grazing as tradition and part of the local identity). Other studies have pointed out that relegating the cultural and social to a separate category of 'immaterial' values and benefits ignores cultural and social aspects of other ecosystem services and the does not do justice to the importance of cultural and social values as processes that determine people's interactions with the environment and adds little to our understanding of environmental values (e.g., Chan et al. 2012; Pröpper and Haupts 2014; Winthrop 2014).

The existence of different frames and ambivalence in relation to nature such as the ones we found regarding peatlands need to be taken seriously if conservation is to succeed (Fischer and Marshall 2010; Groffman et al. 2010; Nisbet and Scheufele 2009). Conflicts around biodiversity and ecosystem services are primarily conflicts amongst humans (White et al. 2009). While these conflicts can be rooted in trade-offs between different groups and ecosystem services they are often also conflicts about values, and need to be understood as part of wider conflicts in society (Fischer and Marshall 2010; Patterson et al. 2003). Such an understanding can help to predict how messages provided by scientists are likely to be perceived and interpreted, and what conflicts may arise from this (Nisbet and Scheufele 2009). In our study, for example, some of the participants in the peatland area saw conservation as something imposed from the outside, defying local realities as well as values, and part of a more general marginalisation of rural populations, identities and ways of life. Consequently, they emphasised their unique rural values, way of life, expertise and the inclusion of local people in decision making concerning conservation. Decisions about what to conserve and how to manage different ecosystems and the services they provide is ultimately a normative question, and different values need to be treated as equally legitimate (Robinson 2011). This includes not only local people and conservationists, but also the wider public who can have emotional stakes in far-away places as well as being called on to finance conservation (whether through taxes, donations or consumerism). While local stakeholders and their values can be included directly for example through participatory decision making or co-management approaches, the values of the wider public can be elicited through a variety of means and included as 'extended facts' (Healy 2011) alongside information on ecological status and economic costs.

In situations characterised by different perceptions, values and ambiguities it is neither always possible nor always necessary to arrive at shared understandings of the problem (Brugnach and

Ingram 2012). Nevertheless, it may still be possible to arrive at solutions which are acceptable to all stakeholders (Brugnach and Ingram 2012). Identifying the (underlying) factors at play in a conflict (e.g. rural marginalisation) is essential to finding these solutions (White et al. 2009), as is the transparent acknowledgement of trade-offs between different ecosystem services and people (Daw et al. 2015; McShane et al. 2011). In Scotland, peatland restoration is by some seen to compete with efforts to recreate what is seen as 'the ancient Caledonian forest' and the services and cultural values they entail. The participants in our study actively discussed such trade-offs in relation to use and restoration of peatlands. In the peat area, where some participants were farmers and others were recreational users, nearly all expressed the wish to balance different uses and states of peatlands, similar to what has been shown elsewhere (Fischer and Marshall 2010). Such points of convergence may form the basis for finding solutions that are acceptable to different stakeholders. Other studies have emphasised the importance of the process of decision making for the long-term sustainability of environmental management and conservation projects studies (Drazkiewicz et al. 2015). This concurs well with the emphasis participants in the peat area placed on the inclusion of local communities in questions of conservation.

7. Conclusion

Peatlands in Scotland are ambivalent places that are viewed as 'good, bad and ugly' (metaphorically speaking) all at the same time. The multiple and ambivalent views of wild landscapes seem not stem necessarily from lack of knowledge, as often assumed by experts, but rather to be due to their biophysical characteristics, history, trade-offs between different uses and differences in personal relationships with nature. To ensure the long-term success of conservation in situations such as these, it is necessary to include local people as well as the wider public and their perceptions and concerns in the discussion and decision making process. This can help conservation practitioners and policy-makers identify underlying causes of conflict, find common ground where possible, improve communication and address trade-offs linked to conservation in a transparent manner. New approaches to conservation involving stakeholders and local communities are emerging (for example, joint purchase of land by conservation groups and/or public authorities and local communities). For these novel approaches to become more widespread, it is vital to understand and manage the different and ambivalent views about and attitudes towards landscape of a greater or lesser degree of wilderness, held by those people who are most affected and those parts of society which directly (via donations) or indirectly (via taxes) support conservation initiatives. This goes beyond a basic understanding that different groups hold different and often contrasting opinions. Ambivalence is inherent to human's perception of nature and wilderness. Therefore, it needs to be incorporated and managed in conservation practice in much the same way as many practitioners have now come to accept and manage the fact that there is uncertainty in relation to the outcomes of the biophysical processes underpinning ecosystem restoration. Ambivalence that is ignored may undermine conservation efforts, but ambivalence can also be used to find common ground amongst different stakeholders if it is acknowledged and worked with. Finding mechanisms for dealing with human ambivalence should be one of the new pillars of conservation practice.

8. Acknowledgements

We wish to thank the participants in the focus groups in Aberdeen and the Isle of Lewis for their time and sharing their experiences and viewpoints with us. We also thank Andrew McBride, Kathleen Allen, Rebekka Artz, Willie Towers, Matt Aitkenhead and Steve Chapman for assisting us with their expertise on peatlands, Carol Kyle for helping with the implementation of the focus groups, Anke Fischer and three anonymous reviewers for helpful comments on earlier versions of

this article, and Ximena Maier for illustrations. We owe the inspiration for the title of this paper to Sergio Leone's 1966 film 'The good, the bad and the ugly'.

9. Role of the funding source

This research has been funded by Scottish Government's Rural and Environmental Science and Analytical Services Division (RESAS), 2011-16. The funding source has not influenced the design, implementation, analysis or write-up of this study.

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590

591 Table 1. Uses, services and benefits of peatlands perceived in the two study areas.

	Non-peat area	Peat area
Productive activities and uses	• Farming • Peat extraction (for fuel, compost and for making degradable pots) • Whisky making • Sheep and deer grazing • Wind farms • Feeding salmon hatcheries (rivers) • Advertising (for tourism)	• Grazing. Historically moorland used all year- grazing, peats etc. Now just grazing sheep, no cattle allowed on peatland • Peat cutting • Heather rope – heavy twine thatching • Heather bunches – chimney cleaning • Renewable energy • Economic use • Ages ago, peat used as walls/boundaries • Dying wool • Water mills • Sheilings
Cultural and recreational activities and uses	• Walking • Grouse and duck shooting • Conservation • Bird watching • Water conservation • Study the past/archaeology • Study biology/scientific research • Orienteering • Old battles (in history) • Roman causeways (Romans used to get lost in peatlands) • Education, research and study • Chilling out (because they are remote and rural) • Photography • Therapeutic use (relaxation and medicinal plants S*phagnum*, bog myrtle and maybe more that we just don't know about yet) • Exploration and discovery, recreational assault courses • Bog snorkelling	• Walking/ relaxing/ space all round • Quad biking [not a popular suggestion with the rest of the group] • Sporting – deer, grouse, black cock - For tourism and locals • Photography/Shooting with a camera - For tourism and locals • Stalking red deer (no roe on Lewis) • Camping • Archaeology: preserved villages, animals, pottery, etc. • Fishing (brown trout) • Walking – leisure. Mainly tourists, some locals. Funeral roads to burial grounds • Tourism
Provisioning services	• Food source for humans (fish, berries and plants) • Fossil fuel (peat burning and conversion into coal) • Animal grazing (deer, livestock) • Whisky • Therapeutic products (e.g. S*phagnum* is antiseptic and the bog myrtle is an insect repellent) • Provision of space for productive activities: grazing, wind farming and forest planting (linked to employment opportunities).	• Domestic heat • Grazing • Compost
Regulating services	• Clean air • Flood prevention • Water filtering • Carbon sink (inhibiting climate change)	• Insects – bird food (mentioned under uses) • Flowers – for bees (mentioned under uses) • Food chain for animals • Habitat • Reduced carbon footprint through using local peat as fuel source
Cultural services	• Country side nostalgia/good feeling of being in the country side/wilderness • Archive of plant history	• Health benefit – clean air (mentioned under uses), mental and physical • Therapeutic effect

	• Archive of society and civilization history • Leisure activities and tourism opportunities (e.g. grouse shooting) • Natural heritage (associated with 'the whole thing') • Views • Open space (and sense of), sense of fresh air • Landscape variety (colours) • Scotland's identity • Artistic inspiration (literature, photograph, etc.). • Health and well-being associated with recreational activities (fishing/walking) • Education and research • Potential therapeutic benefits by being there	• Heather tasting lamb (mentioned under uses) • Space • Wildlife • Historic record • Landscape itself, ambience • Preservation • Social aspects: community life • Walking, peace and solitude • Recreational value • The smell of peat fire • Not commercial, domestic • Peat is free • Inspiration for artists and literature • Intergeneration exchange and support, e.g. help elderly people • Culture and language • Storytelling

The distinction between uses and activities and benefits reflects the way in which the discussion was facilitated for the focus group participants. The categorization of different types of ecosystem services is applied for readability purposes. While we acknowledge the academic discussion in relation to the definition and classification of different types of ecosystem services (Martin-Ortega et al. 2015; Ojea et al. 2012), this is not intended to take position within that debate.

599 Table 2. Dis-benefits and conflicts connected to peatlands.

	Non-peat area	Peat area
Dis-benefits associated with peatlands themselves	• Midges • Falling into them, getting lost and stuck • Smell (sulphur) • Boring for some to walk over • Bleak-open space without shelter in bad weather/ empty/ difficult to navigate (gullies) • Dead bodies (but can be positive if archaeological)	• Cattle (or sheep) bogged down • Tractors bogged down • Poor grazing • Hard to walk on – spongy. Walking on it is tiring. • Difficult and even dangerous to cross (may get stuck) • Midges – 'clouds in your face' • Open expanse and barrier-free – sheep may roam and get lost • Orientation difficult especially in misty weather – no landmark etc. that can be used for orientation • Large amounts of geese nest in peatlands – deprive the land of its feeding potential
Conflicts and problems occurring in peatlands or in relation to peatlands	• Can't not use land easily (wasted space, sheep struggle, restricting property and transport development • Wasteful destruction of ancient resource/ irreversible loss of unique habitat and species (due to drainage and peat extraction) • Extraction, development, forest use, industrial wind farming versus conservation • Pollution/greenhouse gases emission/ brown water associated with extraction and burning of peat and in general with disturbed peatlands (including long term impacts) • May be used as dumping site • Lack of information/ awareness/ understanding • Negative conservation effects on certain species. • Ivy-like destructive plant can affect adjacent property	• Laws and regulations driven by environmentalists (->Conflicts) cause under-grazing which is more detrimental than overgrazing • Reportedly depressed people would walk in it, may get stuck or lost and die • Lack of use • Loss of community spirit due to lack of use (e.g. joint activities etc.) • Conflicts: Misuse of land e.g. for wind farms and commercial developments • Conflicts: cutting into someone else's peat bank

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603 Table 3. Perceptions of uses and characteristics of peatlands in different ecological states, and
604 consequences of peatland degradation.

	Non-peat area	Peat area
Good ecological status	High in biodiversity Nice scenery Unspoilt, healthy & fertile	High in biodiversity Peatlands allowed to rest/recover after having been used
Intermediate ecological status	Grazing and hunting Easier walking Less wildlife More boring Could be degrading or improving	Most useable Natural state for the area
Degraded ecological status	Bleak, boring and inhospitable Result of peat cutting/human use/ overgrazing Difficult to traverse Useless Few plants & animals Maybe refuge for wildlife (no disturbance) Infertile	Unavoidable Can be reversed Easier to traverse

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606 Table 4. Criteria used by participants in the selection of potential restoration areas

Non-peat area	Peat area
• Remote areas where peatlands would remain undisturbed after restoration	• Sparsely populated areas where restoration wouldn't conflict with people's uses of peatlands.
• Close to cities so people can go and visit them	• Areas that need preservation either to prevent further degradation, or following the development of wind farms or the removal of large commercial forests where peatland are likely to be severely degraded
• Areas of current natural interest, so wildlife and other environmental features and habitats would be enhanced or improved	• Community agreement (not linked to particular locations but important selection criterion)
• Areas of recreational interest (e.g. national park) so people can enjoy them and they can work as tourist attractions	
• Areas where there is currently more peatland ('the heart of it')	
• Areas where there is not much peat left,	

preserve what is left	
• Areas currently more damaged	
• Areas where local people could benefit from restoration, although there was no consensus about this one, since it was not clear that in some cases this would mean less possible activities for local people.	

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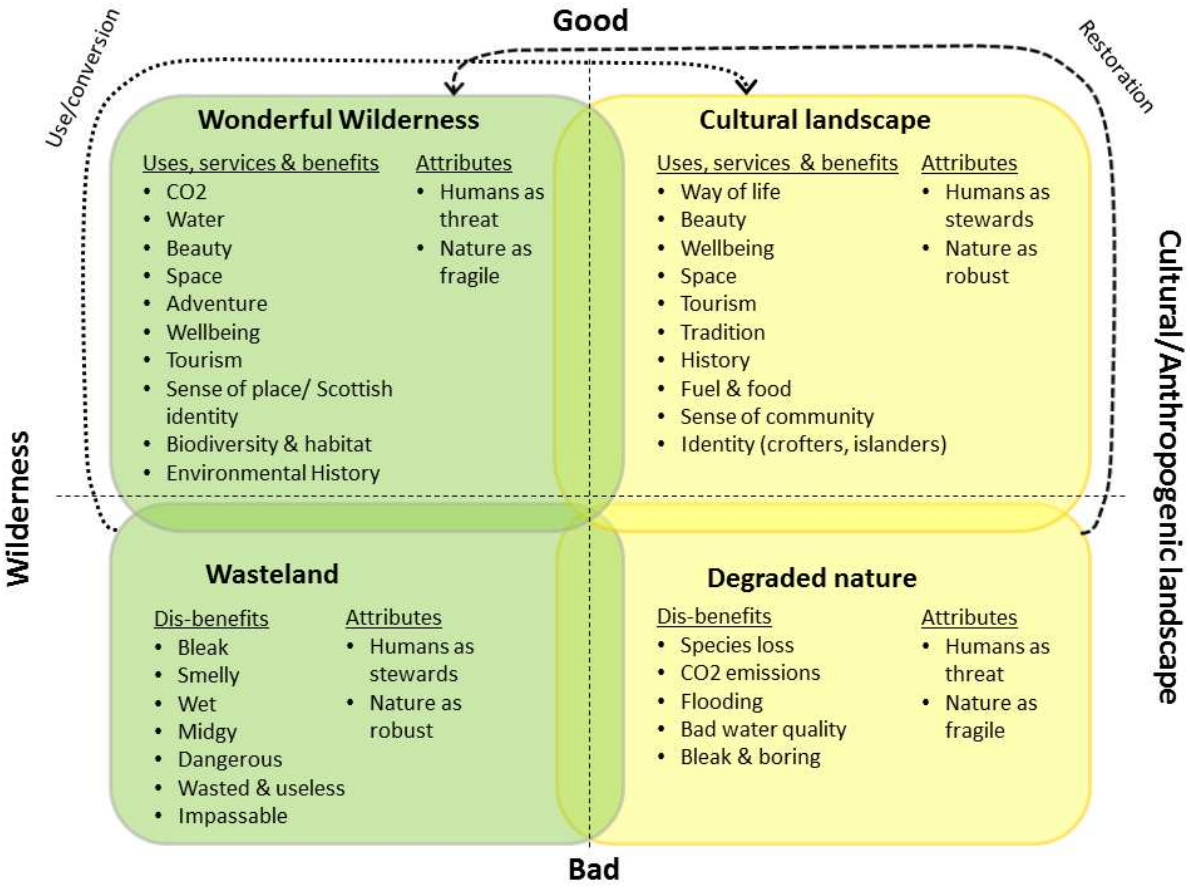

612

613 Figure 1. A schematic illustration of the different narratives encountered amongst the participants.
614 These are ideal type narratives meaning that often people would not consistently fall within any of
615 these but use elements from several of these, depending on the context of the discussion.

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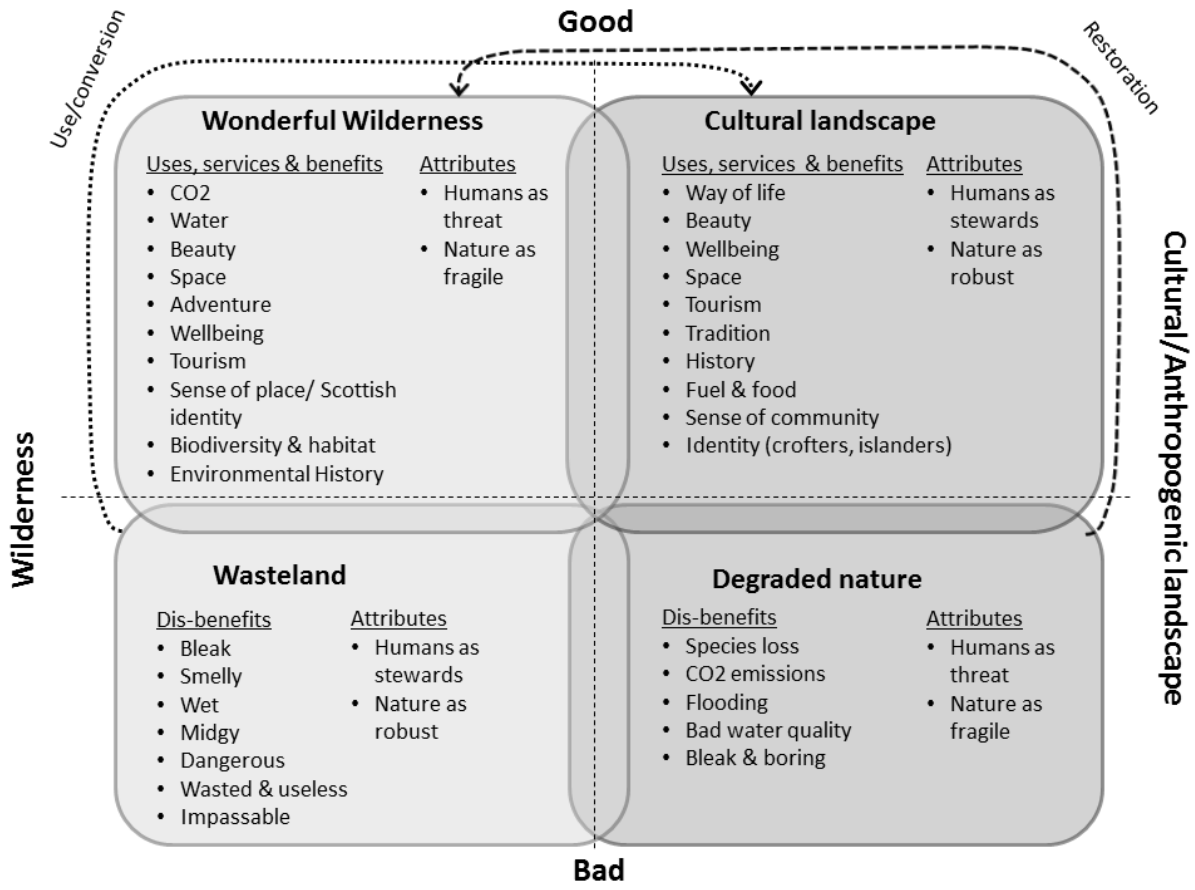

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618 [Black and white version of Figure 1]