



The dilemma of upland footpaths – understanding private landowner engagement in the provision of a public good

Ross MacKay & Katrin Prager

To cite this article: Ross MacKay & Katrin Prager (2021) The dilemma of upland footpaths – understanding private landowner engagement in the provision of a public good, *Scottish Geographical Journal*, 137:1-4, 131-157, DOI: [10.1080/14702541.2021.1994150](https://doi.org/10.1080/14702541.2021.1994150)

To link to this article: <https://doi.org/10.1080/14702541.2021.1994150>



© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 27 Oct 2021.



Submit your article to this journal [↗](#)



Article views: 561



View related articles [↗](#)



View Crossmark data [↗](#)

The dilemma of upland footpaths – understanding private landowner engagement in the provision of a public good

Ross MacKay^a and Katrin Prager^b

^aSavills, Perth, UK; ^bDepartment of Geography and Environment, School of Geosciences, University of Aberdeen, Aberdeen, UK

ABSTRACT

With a right to responsible access across almost all land in Scotland, millions of recreationists make free use of an extensive upland path network. These paths provide easy access to some of the most spectacular, but most fragile habitats in the country. This path network is expected to come under increasing pressure from both use and climate. With many hundreds of kilometres already in poor condition, a new strategy to sustainably manage this important resource is required. As key stakeholders in the management of upland paths, understanding landowner engagement is key. Based on semi-structured qualitative interviews with land management representatives we found a diverging sense of responsibility for path management along the private/non-private landownership divide, but a positive attitude towards public access across the board. This resulted in a generally positive intention to engage in upland path management. Principal factors influencing engagement are; landowner awareness of the complex and nuanced issues associated with path degradation, the perceived benefits of path works, and the availability of and access to appropriate funding. From this, a typology of behaviours was developed. More than one behaviour type was identified on most properties, with engagement increasing in-line with severity of path degradation.

ARTICLE HISTORY

Received 26 February 2021

Accepted 12 October 2021



KEYWORDS


Land management decision making; theory of planned behaviour; Cairngorms National Park; user contribution

Introduction

Hosting unique and sensitive habitats, as well as nationally important landscapes, the mountains of Scotland are a magnet for outdoor public recreation (Wilson & Seddon, 2018). Much of this recreational use depends on the provision of one critical piece of recreational infrastructure; upland footpaths. These are paths in upland areas which are non-vehicular, and principally for recreational use (UPAG, 2016).

There are at least 1100 km of established upland footpaths across Scotland (York, 2019), a network that continues to grow through path evolution by repeated use emerge (Watson, 1991). The origins of many paths now used for recreation date back

CONTACT Katrin Prager  katrin.prager@abdn.ac.uk  @katrin_prager

 Supplemental data for this article can be accessed at <https://doi.org/10.1080/14702541.2021.1994150>

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

to the seventeenth century when regular routes for moving livestock through the uplands became established. While these drove routes would have initially evolved by repeated use, they were valued such that the communities they served adopted their upkeep (UPAG, 2016). As the sporting estate culture grew, so emerged a new type of upland path. ‘Stalkers’ paths, built between the 1850s to early 1900s (UPAG, 2016) were intended to improve foot and pony access for deer hunting and efficient carcass extraction. These were constructed and maintained to a very high standard by private landowners, and for this reason, many remain in excellent condition to this day (SNH, 2018).

With an increase in recreation in the uplands (Wilson & Seddon, 2018) – initially, hill walking and rock climbing, latterly including activities like mountain biking – traditional paths have seen increasing use and new routes to recreationist destinations (i.e. mountain summits) emerge (Watson, 1991). This presents significant management challenges. As traditional uses no longer justify the upkeep of these footpaths and recreation has become the dominant use, where should the responsibility for upkeep lie?

Upland footpaths are a public good; anyone can use these paths for free to access upland areas. Despite there being no associated direct income, ‘upland paths help to generate, indirectly, upwards of £100 m per annum through in-country and external tourism which is particularly valuable in rural and remote areas of Scotland’ (York, 2019).

As a consequence of extensive private land ownership in Scotland (Glass et al., 2019; Glenn et al., 2019), the majority of upland recreational access takes place over private land (Crabtree et al., 1994) and there is little state funding for the cost associated with path maintenance. This cost is substantial, with a recent Upland Paths Audit suggesting £30M is required for building and restoring over 400 km of the path network which is currently in the worst condition, and an annual sum of £400,000 for maintenance across the network (York, 2019). In an economic climate where securing funding is difficult (SNH, 2010), the importance of maintaining upland footpaths is easy to overlook and many are currently in poor condition (SNH, 2018).

This study aims to investigate the attitudes of landowners towards upland path management and to develop a typology to further the understanding of options to address this challenge. The paper addresses the following research questions: (1) what types of landowner motivations and behaviours can be distinguished; (2) to what extent do these different types of landowners engage in managing upland paths; and (3) how can their engagement be further encouraged.

Background

Public recreational access rights

Historically, recreational access to upland areas in Scotland was widely permitted or tolerated under ‘traditional’ or *de facto* rights (Clough, 2004; Miller, 2012) but this eventually became a strained concept. Discontent festered into the mid-90s when a voluntary deal was struck. The ‘Access Concordat’, brokered in 1996 by Scottish Natural Heritage (SNH) (now rebranded as NatureScot), saw landowners agree to the principle of open access, but with the condition that the public would not disturb estate activities like deer stalking (Christie et al., 2000; Clough, 2004). Vergunst (2013) suggests that in this time, pre-land reform, access to the mountains was as good as it

had been since the mid-nineteenth century. Regardless, voluntary agreements would not hold, as the terms of the Concordat were breached by both sides. This, in conjunction with similar access disputes on agricultural land, meant legislative change was soon to follow. In 1997, the newly elected Labour Government instructed SNH to advise on a potential change in access law (Clough, 2004).

In 2003, the Scottish Parliament produced a pivotal piece of legislation relating to landownership and access. Making no reference to the unclear 'traditional' rights that went before, the Land Reform (Scotland) Act 2003 promised to set public access in Scotland out on a clean slate (Vergunst, 2013). It enshrined the public's right to free access over the majority of Scotland, 80–85% of all land being included (Clough, 2004). The act clarified the means by which access can be taken, extending to most forms of non-motorised recreational pursuits. In exchange for these extended rights, the public are bound by responsibilities, set out by the Scottish Outdoor Access Code (SNH, 2005).

Impact of recreational access

In a 2013/2014 survey, TNS (2014) concluded that 9.8 million hill walking or mountaineering trips were taken in Scotland, annually by residents. NatureScot suggested that 88% of these trips utilise upland footpaths (SNH, 2018). A similar survey in 2017/2018 (Wilson & Seddon, 2018) showed that amongst the proportion of the population visiting the hills, the frequency of trips had increased.

While there are many positive outcomes of outdoor recreation on upland paths, including the benefits of exercise for physical and mental health (Vergunst, 2013; Wilson & Seddon, 2018) and the economic boost to rural communities, recreation in the uplands also leads to land degradation (Olive & Marion, 2009). Millions of feet and bike tyres unavoidably make an impression on the ground, leading to erosion and disturbance to flora and fauna (Figure 1). The erosion and deterioration of an unmanaged route can change user behaviour (Rodway-Dyer & Ellis, 2018), sending them off-path (Figure 2) and increasing the extent of damage caused (Watson, 1991). In the uplands, with fragile soils and slow growing vegetation, this can lead to irreversible habitat damage (Cole, 2004; Lance et al., 1991). Off-path impacts may reduce floral biodiversity as far as 2 m on either side of the path (Morrocco & Ballantyne, 2008). The impacts of faunal disturbance are far further reaching, up to several hundred metres where walkers stray from a poorly maintained path (Finney et al., 2005). Rodway-Dyer and Ellis (2018) suggested these off-path impacts may cause the greatest damage. Ultimately, these impacts also have a knock-on effect to the human experience, with the landscape scar of a badly eroded path (Figure 3) reducing aesthetic value (Grieve et al., 1995 cited in Morrocco & Ballantyne, 2008), and a rough and unpleasant walking surface reducing user enjoyment (Ruff & Maddison, 1994).

Path user management methods are available to mitigate the damaging impacts of use. In countries where access is not guaranteed or even expected, the prohibition of outdoor recreation can be a management tool. In the US, some publicly owned wilderness areas are closed to recreationists (Thompson et al., 1987). In Scotland, where a ban on outdoor recreation would be unacceptable to the public, the strategic placement of car parks can increase walk-in distance and thus make certain paths less attractive (Hanley et al., 2002).



Figure 1. This image of an evolving path quite clearly shows the vegetation on the walking route is different to the adjacent vegetation. It also shows the early stages of soil erosion.

Imposing car parking charges is a further strategy to manage visitor numbers (Warren, 2009), and can raise funds for footpath maintenance and repair. However, parking charges are seen by some as an underhand tactic, forcing the public to pay for their access right (Phillip & MacMillan, 2006). In Scotland it seems socially unacceptable to use price as a management device, so where parking charges do occur the price point is typically not set to discourage use. As most options to reduce or prevent use are



Figure 2. As the main path (right) has become an unpleasant walking surface, walkers go 'off-path' creating a new track (left).



Figure 3. Severely eroded path becoming a landscape scar.

unpalatable in a Scottish context, path repair and maintenance becomes the best option (Figures 4 and 5).

Theoretical background

Paying for public goods

Due to public access rights in Scotland, it is almost impossible to exclude users or to enforce payment for use of upland paths. The non-use value of ecological protection



Figure 4. Recently restored path.



Figure 5. Bags of stone and a new bridge deposited on the hill by helicopter. This illustrates the logistics and cost involved in upland path management.

and the recreational use-value both have low rivalry between users (Crabtree et al., 1993, 1994), meaning the use by one individual usually does not prevent or restrict that of another. Rivalry can exist when paths become busy, potentially reducing individual user enjoyment (Aadland et al., 2012; Menz & Mullen, 1981). The public good nature of upland paths, with its limits on revenue generation, also restricts the finances available for maintenance. However, if upland paths are not managed and maintained, use and non-use values will be degraded. In economics, examples such as this are considered a classic example of market failure which suggest the necessity of public intervention by means of regulation or public spending.

Public spending

The provision of public goods and their preservation for the future should be, at least in part, in the remit of the public sector. In Scotland, there is no centralised management of upland paths, nor any ring-fenced public spending specifically for upland path management (SNH, 2018). Local authorities may elect to direct funds towards upland path management, but only to the detriment of other priorities. In a study of a Scottish local authority spending on recreational facilities, Christie et al. (2000), measured cost against public benefit and found that upland path upgrade and maintenance were economically efficient uses of public money. Despite this, upland paths only received a very small percentage of available funding, losing out to less economically efficient infrastructure.

Public spending comes with societal baggage. In the context of upland path management, a conflict exists in that outdoor recreation participants are typified by the middle class (Christie et al., 2000; Curry et al., 2001). As such, questions are raised as to the equity of spending substantial sums of public money on the provision of a good that disproportionately benefits the already affluent.

One possible public policy mechanism to incentivise land managers to provide public goods are voluntary, incentive-based schemes. An ‘Improving Public Access’ scheme, via the Scottish Government (2020), saw an allocation of £3.5 million for rural paths in 2019. This scheme was open to a range of applicants including private landowners, charities

and public bodies. However, due to restrictive criteria (i.e. maximum gradient specification) aimed at ensuring equality for a greater range of physical abilities, the scheme was unsuitable for upland paths.

Woodland creation grants are another example of a public funding mechanism targeted at land managers to encourage the delivery of public goods. These forestry grants come with a long-term expectation and their success is measured (Scottish Forestry, 2020). Land managers must formally commit to delivering the woodland that the public has paid for. Failure to do so can result in heavy fines.

User contributions

Outdoor access is heavily influenced by land ownership patterns. The history and nature of land ownership and use has a great bearing on a nation's outdoor access policy. User contribution mechanisms are linked to what is socially acceptable in a specific historical, social and political context. In some countries, research has produced evidence that entry fees to secure maintenance of natural attractions would be acceptable (Reynisdottir et al., 2008 in Iceland), and inhabitants are willing-to-pay to avoid losing outdoor recreation opportunities (Ezebilo et al., 2015 in Sweden).

Where outdoor access is restricted, 'excludability' becomes a factor and payment again becomes more acceptable. In the USA, the majority of land is privately owned (Koontz, 2001), private property rights are fiercely defended and trespass laws apply, which makes outdoor recreation highly dependent on public land. The USA was the birthplace of the national park; vast areas were designated and conserved for wildlife and recreation. Entry to these public lands usually commands an entry fee or permit (Aadland et al., 2012), the cost of which can contribute towards the employment of park rangers, conservation projects and maintaining infrastructure. Private landowners, where they choose to do so, can permit recreational access on their land and may apply their own fee (Gentle et al., 1999).

In Scotland, however, as part of the Land Reform (Scotland) Act 2003, the right to responsible recreational access is a point of pride for many and it permits almost unfettered free access to the most spectacular landscapes in the United Kingdom. Even where degradation of these special places is severe, the right of access stands. With a history of *de facto* rights of access, a newly enshrined entitlement to access and historical baggage of access and landownership disputes, a user pays approach seems inconceivable (Bennett & Tranter, 1997; Hanley et al., 2002). Even parking charges are often resented, seen as an infringement on free access rights (Phillip & MacMillan, 2006).

Charitable grants and fund raising

In the absence of public funding, the majority of upland path management is funded by charitable grants and fundraising. Bodies like the National Trust for Scotland (NTS) and the John Muir Trust (JMT) have their own respective footpath fundraising campaigns (JMT, 2020; NTS, 2020), the proceeds of which they use to manage footpaths on their own properties. The Outdoor Access Trust for Scotland (OATS) raise funds through several mechanisms including fundraising campaigns, corporate sponsorship ('sponsor a path' schemes), and operating car parks with parking charges. On top of this, they work with governmental organisations (i.e. SNH) and a major contributor to upland path funding, the National Lottery Heritage Fund. OATS pool funds from all of these sources and preside over nationwide path rebuild, repair and upgrade schemes. The

latest, ‘The Mountains and the people’ running from 2015 to 2020, allocated £5.6 million to path management and related initiatives (OATS, 2020).

Private investment

Public goods may also be supported through private investment. In the economic definition, a rational investment may anticipate a return (East, 1993). Although footpath provision is strongly linked to rural economies, benefiting retail and tourism sectors, there is no mechanism for land managers to directly recoup costs. Indirectly a land manager may gain some income through tourist enterprise, though this is likely to prove insufficient to justify upland footpath investment.

Understanding attitudes and behaviour

In the Scottish context, where the majority of land is privately owned, it is important to understand what motivates private landowners to engage in upland path management. This may aid the design of appropriate incentives, either through public policy or other mechanisms, that support investment in upland footpaths.

Management of outdoor recreation areas and infrastructure in Scotland has limited opportunity for direct economic return. Charity and public body landowners such as NTS, JMT and Forestry and Land Scotland are driven by conservation, habitats, landscape or heritage (and timber production in the latter example) but share a common objective to facilitate public access (Crabtree et al., 1994). Upland path management complements their objectives, hence they typically manage and maintain their upland paths to a high standard (Warren, 2009). These various organisations are reliant on public financial support (Crabtree et al., 1993), be it through taxes, membership subscriptions or donations, and they also have ready access to grant schemes.

The private landowner is less well understood, particularly in their role in the provision of free outdoor recreation (Buckley et al., 2009; Mulder et al., 2006). Private land managers have diverse motivations and management objectives which often do not feature public access facilitation highly, if at all. Therefore, decisions regarding access pressures and damage will be made in a different context to that of non-private land managers. Research into the general motivations of private estate owners in Scotland has shown that for most, economic factors dominate (Wagstaff, 2013). While many express socially and environmentally conscious sentiments, these motivations may be suppressed in management decisions due to financial constraints. Where properties have a sufficient financial ‘cushion’, then other motivations can come to the fore.

With considerable costs involved and little scope for recovering investment, management of upland footpaths is a significant burden, particularly for private land managers (Warren, 2009). For those who do engage in footpath management, it would appear that motivations must be non-monetary. Private landowner provision of public goods can be an expectation of wider society (Worrell & Appleby, 2000); a responsibility linked to the privilege of land ownership and assumed wealth. Cultural and social pressures like this may contribute to private land manager decision making and override the requirement for an investment to be economically sound (van Dijk et al., 2016).

The Theory of Planned Behaviour (TPB) (Ajzen, 1991) has been used in previous research to analyse factors that contribute to land manager decision making, such as factors associated with farmers' intention to perform unsubsidised agri-environmental measures (van Dijk et al., 2016) or participate in conservation contracts (Greiner, 2016), the role of renewable energy production in farm business decision-making (Sutherland & Holstead, 2014), and the potential of a new policy instrument to encourage private forest owners to implement close-to-nature, multi-functional forest management (Van Gossum et al., 2005). According to TPB, the 'intention to perform' is influenced by the individual's attitude toward the behaviour, subjective norms and perceived behavioural control. The intention of private landowners to perform upland path management is shaped by three components:

- Land manager attitude – their appraisal of the need or justification to engage in path management, and appraisal of its potential outcomes.
- Subjective norms – perceived social or cultural pressure to engage in path management.
- Perceived behavioural controls – perceived ease or difficulty with which desirable outcomes of footpath management may be achieved, or perceived availability of resources to undertake path management.

Land manager behaviour will be shaped both by their 'intention' and 'actual behavioural controls' (i.e. actual availability of resources, opportunity, time, finance, knowledge).

Methodology

Case study area and participant recruitment

The Cairngorms National Park was selected as a case study area because it offers a clearly defined geographical area which is 'of international importance for both nature conservation and recreation' (Christie et al., 2000), and has produced some polarised views on footpath condition (SNH, 2018); some users finding the paths to be very good, while others found them to be very poor.

The aim of this research was to gain insight into the complex and subtle factors influencing land managers' decision making, which is best achieved through interviews and qualitative analysis. Although TPB is less commonly used in conjunction with thematic analysis, it is a valid application (Ajzen, 2020), as demonstrated in the context of understanding Scottish landowner motivations relating to on-farm wind turbines (Sutherland & Holstead, 2014).

Interviewees were sought from landed estates located within the National Park, that also needed to fulfil the following selection criteria: (i) host one or more Munros, and (ii) are in private ownership. A proportionate sample of non-private land holdings was included to provide contrast.

Similar to Hanley et al. (2002), who used the number of 'Munroists' as an indicator of increasing participation in outdoor recreation, the presence of Munros was used as a criterion due to their continued link with outdoor recreation in the uplands. It is common for property boundaries to pass over the summits of hills and along ridgelines, often

following a watershed. As such, some Munros are split between two or more properties. In these cases, all relevant properties were included.

Wightman's (2020) 'Who owns Scotland' online map tool was used to identify the different landholdings in the study area, and where their property boundaries lie. This map tool projects property boundaries onto an Ordinance Survey map which also shows the location of prominent mountains. From this, it was possible to identify which properties fit criterion (i). The map tool also offers an estate name associated to each land parcel and suggested ownership, which aided selection on criteria (ii).

There are 62 Munros in the Cairngorms National Park (or split by the park boundary). The process above identified 30 named land parcels over which these mountains are split. During the process of identifying estates it became clear that some adjacent land parcels were in fact owned and managed collectively. This resulted in 26 properties, of which 22 properties are privately owned (84.6%), meeting criteria (ii), 2 are charity owned (7.7%) and 2 are publicly owned (7.7%).

Estates were contacted by the first author, using contact details from estate websites, direct e-mail contact where land managers were known from previous interactions, emailing professional contacts at national land management firms and seeking an introduction to the land manager. In addition, interviewees provided contact e-mail addresses for neighbouring estates.

This approach resulted in an almost complete list of property contacts (25 of 26). All 25 properties were invited to take part in this research. A total of 11 properties responded, including 9 private, 1 charity and 1 publicly owned property. Interviews were conducted with each thus engaging with 42% of properties that met the selection criteria, and a representative range of property ownership types.

This research followed a purposeful sampling approach (Creswell, 2013), deliberately selecting those participants best placed to inform the research. The ideal interviewee to attest to the motivation behind property management in many circumstances may be the owner. However, some of the properties (i.e. charity owned) do not have a singular owner. Also, due to the nature of private land ownership in Scotland, often with absent and/or secretive landowners (Warren, 2009), this research did not expect to engage directly with many private landowners. Though this was desired and attempted, this research only engaged directly with one landowner. All other interviews were with professional land managers, which were considered to be an appropriate, and more accessible, substitute. This study recruited participants from across the spectrum of involvement in footpath management, importantly including participants who had no engagement with the topic, thus ensuring an 'illustrative sample' (Valentine, 1997).

In addition to land managers, three key informants with professional links to footpath management were also contacted and informed this research including a land use research organisation, a governmental body and a conservation charity. Key informant conversations and e-mail correspondence were used to shape the interview schedule and comment on the topic from a different perspective.

Semi-structured interviews

Semi-structured interviews were chosen as the preferred data collection tool because it allows for generating in-depth accounts of individual's attitudes, perceptions, and

intentions (Denscombe, 2017). An interview schedule (Appendix 1) was drafted after preliminary engagement with key informants. The schedule was designed to cover areas essential to TPB; attitude, subjective norms and behavioural controls. The interview schedule was used as a prompt for the researcher, keeping each dialogue on an approximate course (Valentine, 1997), ensuring interviews were productive, relatively consistent and produced quality data (Denscombe, 2017). The schedule was piloted with a land manager from a property that did not meet the geographic selection criteria.

Due to COVID-19 restrictions, all interviews were carried out remotely between June and August 2020. Video calls were selected as the preferred method of remote interviewing, being cheap and flexible to arrange. However, due to poor internet experienced by some land managers in remote rural locations, a combination of video call interviews and telephone interviews was required. Interviews ranged between 30 and 60 min. Recordings were transcribed verbatim. For key informant conversations that were not recorded, handwritten notes were typed up immediately after the interview and supplemented by the interviewer's recollection of points discussed to give a more complete interpretation of the dialogue.

Data analysis

NVivo 12 Pro software was used to assist in coding the material. This followed a deductive approach, using the TPB concepts attitude, subjective norms and behavioural controls, which resulted in the identification of several key themes relevant to the land manager decision-making process in footpath management. At the same time, with an inductive approach, points which featured in several transcripts were coded as important themes. Other groups of nodes, when combined, identified other areas of importance. In this iterative process, the hierarchy of nodes and groups of nodes was established, eventually revealing the final themes (Denscombe, 2017).

In order to preserve anonymity, the generic term 'land manager' will be used as a collective term for participants (i.e. landowners, estate factors, management agents and head rangers). Place names have also been anonymised.

Results and discussion

The presentation of results is structured by the three components of the TPB that shape the intention towards a specific action, setting out land manager attitudes, their subjective norms and perceived behavioural controls. The actual behaviour, i.e. performing an action or not, is in turn shaped by an actor's intention and actual behavioural controls. Six different behaviour types and relevant influencing factors were identified based on the interview data.

Attitudes

Whether an actor holds a favourable or unfavourable attitude toward an action is linked to the value they associate with that action or its outcomes (Ajzen, 1991). Land manager attitudes were influenced by the level of awareness they had of issues caused by footpath degradation, the management objectives for the estate which shaped their general

attitude towards public access, anticipated benefits to the property, and the type and extent of works required.

Awareness of upland path issues

Participants expressed a general awareness of the damage potential of recreation in the uplands, even amongst land managers who felt this was not currently an issue on their land. Awareness was higher on properties where access utilisation is high and many of the potential impacts were realised. Most participants perceived that access utilisation is trending upwards. Existing paths are getting wider, and new paths are forming. This interviewee describes a route developing

... from [the end of the vehicle track] people just go cross country. But you are starting to see a regular route ... it's quite obvious ... Just starting to get worn in this last year or two. I would have said, aye, a few years back you wouldn't have seen it. (Interview G – Private)

Of all the impacts associated with upland paths, an aesthetic factor was most frequently mentioned among participants, both private and non-private. The motivation to take action was linked to preventing the path becoming an 'eyesore' in the landscape: '[The path] was visible from miles away basically. You could probably have seen it from the moon! You might have seen it on Google Maps for sure' (Interview K – Private).

This awareness of damage only contributes to a positive engagement where erosion was a current and local concern. Despite awareness of potential impacts, there was almost no consideration given to pre-empting damage, only reacting to it when it had begun to become a big issue.

I think it would have to get a good bit worse than it is now. It's really only in the last ten years that we've started to notice this. And, at present, it's not an eyesore. Although its, it is obvious ... I mean, if it started to braid, and get a lot wider, we'd have to look at grant money for sure ... At the moment the path might be say, awh, half a meter, to a meter wide ... if it started to get maybe four or five meters wide, we'd really have to start looking at it. (Interview G – Private)

Land managers who prioritised conservation objectives understood the damage of erosion, trampling and disturbance. However, there appeared to be lesser understanding of the range of associated subtle ecological impacts like species composition change (Rodway-Dyer & Ellis, 2018). Footpath management was unanimously accepted as a reasonable and effective mitigation for the damage caused by access takers:

... if you go up onto [the mountain], you know, in the past it's been tens of thousands of square meters of montane heath that's totally trampled and destroyed. But, by keeping people on the path and landscaping the areas, you can repair that. (Interview B – Private)

Management objectives and attitude to public access

The non-private estates were managed primarily for conservation of habitats, species and landscape, as well as for recreation. Therefore, upland path management to encourage and promote public access was part of their remit (consistent with Crabtree et al., 1994; Warren, 2009). Only few of the private land managers prioritised conservation, while most had diverse management objectives which were framed by economic considerations (consistent with Wagstaff, 2013). Private properties tended to have a more

reserved approach to public access facilitation, illustrated by this response; ‘It’s not something we spend money on, but we’re happy for the public to use the land for their purposes. Provided it doesn’t create impossible difficulties for land management ...’ (Interview D – Private)

All participants, including non-private land managers, noted potential conflicts between public access and other management objectives. Such ‘difficulties’ include disturbance of wildlife resulting in welfare and distribution concerns, vegetation damage and erosion by trampling and disturbance to management activities (i.e. deer management). For some private owners, public access can also compromise their privacy and amenity enjoyment of their property. These conflicts between access users and land managers have the potential to act as both incentives and deterrents to engagement in footpath management.

Some interview data suggested that some private landowners may be reluctant to reach out to third party organisations to seek grant funding, even once they had noticed the first signs of damage, erosion and paths widening. This reluctance may suggest a resistance to losing control. One interviewee (Interview G) indicated that accepting assistance or funding would come at a cost; the loss of management autonomy. This cost versus benefit tipping point will be unique from one property to the next, and may be linked with other management considerations (i.e. the importance of privacy). In addition, Interviewee B held a perception that seeking externally funded path works raised the profile of a route, encouraging further public utilisation of the route which may be an undesirable outcome for a landowner.

Benefit to property

Aligning with their respective management objectives, both non-private and selected private land managers concurred with UPAG who proposed that reducing the human impacts of erosion and ecological damage should be the primary motivation to undertake upland footpath works. The majority view of private land managers, however, was that the public are the principal beneficiaries of footpath management, without any economic benefit to the estate. They recognised the value of footpath management for erosion control, and some secondary benefits (i.e. minimising deer disturbance), however, these were not viewed as valuable enough to their land management operations or businesses to justify anything more than light touch/low cost maintenance. Most private land managers saw the upland footpaths as a public good and did not feel it was their responsibility to provide it: ‘It’s a public good and it’s for the public to maintain it.’ (Interview D – Private). ‘It takes a huge amount of money, footpath work. So for a private estate, it’s almost, where’s the benefit to them? I can fully understand that.’ (Interview F – Non-Private)

One of the potential benefits of footpath management to the property is as a tool for spatial management of access users. Land managers can deliberately build, improve or promote paths in certain areas to alleviate pressure elsewhere. These ‘sacrificial’ areas (Interview B) can be used to maintain privacy, reduce deer disturbance or to keep the majority of access users away from sensitive sites (i.e. SSSIs).

... having a good comfortable network of paths, then we know where the general public are gonna be ... we manage that [location] as a honey pot sight really, which keeps pressure off the more sensitive parts of the estate on the [other] side, where we’ve got the woods and the

capercaillie, also [the owner's residence] ... it's an important way that we sort of manage access onto the estate really. (Interview B – Private)

Type and extent of works

When asked about footpath management in general, participants typically associated this with extensive rebuild, repair or upgrade projects which were perceived as costly, making land managers reluctant to engage. 'People say access is free, but it's not. It costs a fortune.' (Interview B – Private)

There was a substantial attitudinal shift between such capital projects (large scale rebuild or technical repair projects) compared to revenue works (routine maintenance). For the latter, attitudes were more amenable. Many private land managers allocated or would allow staff time to be spent on light touch maintenance: 'If erosion became an issue on any sections, that would be of great concern to the owners and the staff there ... the staff would undertake some work to prevent that.' (Interview I – Private) and

We do a lot of path and trail and track and bridge repair with our stalker teams across the whole estate. And is really quite significant, when you consider the amount of time and money, in terms of public benefit. (Interview L – Private)

Subjective norms

The social context in which intention is formed to undertake footpath management was influenced by land managers perception of the public's expectation and their peer's expectation. Both represent areas of potential social or cultural pressure experienced by land managers.

Perceived public expectation

In the context of footpath management, public concerns may include path user experience, equality in access, erosion, habitat disturbance, etc. This research indicated that specific public scrutiny was not exerted directly on land managers. All participants reported low to non-existent pressure from access users, even where path conditions were less than ideal.

Nevertheless, most land managers felt that public perception of private land ownership is an important factor. The following quotes highlight the importance of public relations (PR) and social responsibility: '... we've got to show that we provide benefits to the public, you know, and looking after the paths is part of that. If we just let them erode it would be a disaster from a PR point of view.' (Interview B – Private). 'It [the path] was quite an eyesore ... and that obviously has ... a negative effect of people's perception of the estate. So, in PR terms it was important to address this' (Interview K – Private). '[PR] is massive. We take our social responsibility really importantly, so that drives an ethic for our paths ... We are keen to engage with all the groups that have an interest in access.' (Interview L – Private)

Perception of peers

Many participants were keen to discuss the actions of their neighbours, showing awareness of the management objectives of those around them and how footpath management

may fit in. However, no peer pressure was evident among the participants in this research. Instead, there appeared to be a unilateral understanding that each property has its own unique objectives and financial limitations.

A possible exception to this was proposed by Key informant Y; that there may be something of a negative peer pressure among some land managers. Hypothetically, among those for whom public access is considered a nuisance, peer pressure may act to dissuade engagement in footpath management.

Behavioural controls

Interviewees identified various perceived behavioural controls. Most of these barriers are interconnected, particularly by finance, which emerged as the dominant behavioural control.

Funding mechanisms

The presence or absence of funding was the key influence on intention and behaviour regarding upland footpath management, to the extent that intention could be overruled and other behavioural controls became almost irrelevant. If all else in relation to a project is looking favourable, funding has absolute power over its fate:

So, the route's been chosen, it's been agreed, it's gone through planning, and now the difficult process comes in, ehm, they need to find almost a quarter of a million quid to do it. And that's where we stopped, dead. (Interview E – Private)

The scale of the investment required, and the near impossibility for any financial return, make the economics of footpath management unattractive and often prohibitive. Therefore, self-financing footpath capital works was untenable for almost all properties; only one example of such privately funded works was identified. The majority of properties, private or otherwise, did not have the means to self-fund extensive path management. There was almost universal agreement that this work should be funded externally; either from charitable funds, the public purse or by path user contribution. To a limited extent, private investment does occur; in the shape of staff time applying for and overseeing capital works. In addition, path maintenance work is often undertaken at the landowner's expense.

Different types of work were financed in different ways, and multiple funding mechanisms may exist on one property. The non-private organisations routinely invested in footpath projects on their properties, with large capital projects typically funded by grant aid, and some capital works and most regular maintenance financed through footpath-specific fundraising campaigns, visitor car parking charges, public membership subscription fees and for some properties, management grants from government.

User contribution

There was general support for the concept of user financial contribution to path management. But it was recognised that this was a controversial idea, logistically unfeasible, and probably an unlikely way forward.

Some sort of long-term funding source, you know, maybe from the people who use the paths, would be nice. A bit controversial there ... I think the people who are doing the

damage should be contributing more, a lot more, towards it ... I don't know how you would do that to be honest. (Interview B – Private)

There might be an argument for a specific tax, but it's awfully difficult to see how that would go down, in a country where, we are supposed to have world beating legislation for public access, and everybody is totally wedded to what they call the 'right to roam'. So, I think getting direct investment from users is a pretty tall order, and very controversial. (Interview D – Private)

Visitor car park charges are one of the few legitimate mechanisms to generate upland path associated revenue at the point of use. These facilities, deployed by 6 of 11 properties (1 charity, 1 public body, and 4 private), have the potential to generate modest sums which are typically reinvested in path maintenance works, or the maintenance of other access-related facilities. Consistent with Phillip and MacMillan (2006), most properties (5 of 6) experience high compliance with payment. Illustrating the range in perception of what is socially acceptable, the remaining 5 private estates perceived parking charges as too politically charged to attempt.

The problem is ... if a landowner were to say '... this area has become very popular and we've got cars parking all over the place. We are going to have to set up a car park, which is expensive, and we are going to charge to get some money back.' (...) the reaction to that would be terrible. (Interview I – Private)

Also consistent with Phillip and MacMillan (2006), some participants held the view that payment for non-private car parks may be accepted as a contribution to a good and trustworthy cause, while private estates charging for parking was likely to be more controversial. An alternative approach for private land managers was to invite the local authority or a charity like OATS to operate a car park on their land (Interview D – Private).

Grant funding

The majority of private property footpath management spending is grant funded. Funding opportunities are limited, and most participants felt that current funding models are far from sufficient. Of the interviewed properties, seven had received grant funding in the past.

In the Cairngorms National Park, the majority of upland path grants are handled by OATS as described above. Funding may be allocated to a path project by a third party like OATS without a land manager's request. This appears to occur mainly for particularly high-profile routes in very bad condition. In this scenario, the land manager is passive in financing and managing the works. Their only contribution being permitting the works to take place: 'That path out there has had a lot of work done to it ... we used to have a maintenance squad that came in, not through us, I presume CNPA paid for it.' (Interview E – Private)

Lesser known routes or appeals for works on less extensive damage require proactive land managers. Some land managers take an active, facilitating role in attracting and allocating grant monies, via organisations such as OATS.

What we generally do is, we have workshops [lead by OATS] where we all get together and we prioritise what paths need to be done in the Cairngorms. And, I go along to those, all those workshops. (...) So, I've been really successful at getting a lot of our paths onto those prioritised lists. Whereas if you don't, if there isn't a representative from the estate

there, or a ranger who's got a handle on what the erosion is, or what the upland path issues are on the estate, that estate is less likely to get their paths on the prioritised list. (Interview B – Private)

This facilitating position can be interpreted as an in-kind contribution to footpath management. It is an investment of personnel time and resources to ensure grant funding reaches the places where it is needed.

Funding distribution

A potential inequality in grant funding distribution between private and non-private landowners was highlighted by one participant and two key informants. Not only are private properties ineligible for some public funding streams (applicant eligibility criteria tend to specify registered charities, constituted community groups and/or local authorities), private land managers may lack the expertise, resources and time to lodge successful grant applications:

[O]rganisations like the [charity landowners] ... they've got a department that will deal with [applications], it's ... so much easier, than say me picking it up and trying to battle my way through it. (...) There's a lot of background work you've got to do to justify it [grant funding], which again, public money, totally understand it ... but yeah, sometimes you are sitting there going, well, yeah, the benefit to us is what? (Interview E – Private)

It certainly appears that private estates are less equipped in this regard than landowning NGOs:

I suspect that some public sector and landowning NGOs are more successful at securing funding for upland paths because they have the staff resource to commit to it, whereas private landowners are generally less likely to have the time and expertise for fundraising. (Key Informant V – Non-Private)

Another issue arising from the current funding model is the inequality between funding for path building and funding for maintenance. The majority of available funding is typically attracted by high profile rebuild projects, but these projects often overlook the long-term ongoing maintenance requirement. 'It's the usual problem ... you can get capital funding quite easily. Revenue [maintenance] funding is always an issue ... all that happens is that things deteriorate and it just becomes another capital project, it gets in such bad condition' (Interview K – Private). 'You can access funds for capital but you can't access funds for maintenance. So people whack paths in, and then they deteriorate' (Interview L – Private). Without ongoing maintenance, the huge capital investment in path building is at risk of being washed away. It would seem more effective if coupled with recurring maintenance payments as in Forestry Grants (Scottish Forestry, 2020).

Diverging objectives

A couple of participants noted that the objectives of grant funders are potentially at odds with the objectives of applicants. In the rural context, funders often set out to improve tourism and increase local economy resilience. This is not the same as the reasons of the properties who are applying for funding, who are focused on reducing damage

and disturbance. Although there is potential for cross-over, the following quote illustrates that funders and land managers do not always appear to be on the same page.

... it is not for providing recreation or exercise or economic benefit from the tourism point of view or making it a nicer experience for people to walk, or people not getting wet feet when they go on the paths, it's to repair habitats and putting in an upland path is one tool that you can use to repair those upland habitats. (Interview B – Private)

Indeed, the single instance of privately funded capital work encountered in this research concerned paths in a particularly sensitive habitat. The usual grant funding channels, with economic and tourism ambitions, and publicity, were viewed as incompatible with an area where increased public access would be potentially damaging. The estate chose to avoid grant funding for this particular area. '... we've been just privately funding contractors to do work on those paths. It's places where we don't want to encourage folks. (...) So we're not applying for public money, we are just doing it privately, ourselves.' (Interview B – Private)

Weather, contractor availability and specific requirements

In the context of climate change with the increased frequency of intense summer downpours and rapid snowmelt, in combination with strong winds, upland paths are likely to suffer from more erosion and require more frequent or even ongoing path maintenance, repair and restoration. Interviewees who had an understanding for the practicality of footpath works (e.g. interviewee A and F) indicated that weather also presents a barrier; with snow and strong winds the limiting factor.

A further barrier is the availability of contractors. The upland path industry is highly specialised, with only a few contractors in Scotland. This, coupled with winter weather limiting the work window, can result in contractor availability presenting a barrier to projects progressing. Despite efforts to recruit and train people to grow this specialist work force, once funding for large path work projects finishes, the workforce tends to leave the industry.

[Y]ou might get a few years where there's no big project going. So, what do those guys, that you've trained to do path works, and set up all this industry, what do they do in the meantime? They all go disappear and do other jobs. (Interview B – Private)

Where routes pass through an area with some form of conservation designation, another level of complexity is added to footpath management. The planning process may become more arduous, requiring consent from NatureScot for most works. Consent may be tied to certain conditions (e.g. restrictions in the type of stone that can be used), resulting in additional cost and management input. It is common for upland path work to be reliant on helicopters to bring stone and equipment to the work-site. Seasonal restrictions on helicopter lifts near raptor nest sites (often not before mid-August), reduce the path work season further.

Because we've got lots of raptors breeding on site, we can't do any air lifts really before, into mid-August ... even late-August before we can do any air lifts if we need to move stone into an area ... you've only got September, October, November really. Your sort of trying to cram it into those three months, before the bad weather comes. (Interview F – Non-Private)

Intentions and actual behaviour

The attitudes, subjective norms and perception of potential barriers described in the previous section jointly shape land managers behavioural intention to engage in footpath management.

Non-private land managers typically showed positive intention. They expressed a sense of obligation to protect the land they manage for the public good. They promote public access, therefore, accepted responsibility for mitigating the potentially damaging impact of this. Their intention stemmed from joint remits of conservation and supporting public access. This position was enabled by ready access to public funding (grants, memberships, donations, etc.), specialist resources and suitable financial models.

A remit of encouraging free public access was not typical of a private landholding. Access users are typically welcome, but ownership of the damaging effects of access are not. Private land managers almost unanimously shared a view that footpath maintenance is not their responsibility. They also typically reported almost no societal pressure to the contrary. The issue of ‘the public exercising a public right’ was seen as requiring a public response. Despite this shared view, all private land managers were engaging or willing to engage in footpath management to a certain extent. This willingness may stem from wider notions of stewardship and progressive land management; going beyond what land managers view as their responsibility, to deliver a public good in the context of more general discourses on land reform and sustainable land use.

It was unanimous that funding of footpath management was the principal barrier to enacting positive intention, and where this could be addressed, all other potential barriers such as weather and contractor availability could be overcome. Even where intention was low, access to funding appeared to be a sufficient catalyst to trigger the intended behaviour. Conversely, the absence of funding usually resulted in non-action, irrespective of the strength of intention.

Typology of land manager behaviour

Six different types of land manager behaviour are proposed from the research, with four of these representing active behaviour and two passive behaviours (Table 1). Five behaviour types were identified among participants, and the sixth type (opposing footpath management), was proposed by one key informant.

On most properties, land managers displayed more than one behaviour type. This occurred where land managers had a range of path types to manage, and was driven by path management objectives or criteria that were not met by all routes. For example, an active approach was taken to sensitive routes but a passive approach to busy ‘core paths’. Also, some properties would be categorised differently depending on the scale of the project undertaken (i.e. an active approach to ‘light touch’ repairs and maintenance, but a less active or passive approach to large rebuild projects).

Active and self-funded

‘Self-funded’ relates to any expenditure on path management that is not funded by an external source. For private land managers, this equates to a direct private investment

Table 1. Overview of behaviour types in upland footpath management.

| Behaviour type | Description |
|------------------------------------|--|
| (1) Active and self-funded | Land manager uses internal funding to undertake either capital or revenue works. This was exhibited to the greatest extent by the two non-private land managers. |
| (2) Active and facilitating | Land manager seeks out funding and assistance from external sources. Remains engaged through delivering footpath management projects. |
| (3) Active and conservative | Land manager opposes building of paths for conservation reasons (i.e. Wildland designations). Actively engages in light touch maintenance to evolved paths. |
| (4) Active and opposing | Land manager prevents path management from taking place. |
| (5) Passive and permitting | Land manager takes no active involvement in seeking funding but does permit third party organisations to carry out path management. |
| (6) Passive and not engaged | Land manager has no impetus to engage in path management, usually due to a lack of access pressure or path degradation. |

in paths, for non-private land managers this relates to spending of funds assigned to path management in the organisations budget. Such funds are raised in a range of ways (i.e. membership subscriptions or donation campaigns) which support their use in the provision of public goods. Due to the prohibitive costs of extensive rebuild/repair/upgrade projects, these works are almost always reliant on external funding. Therefore, Active/Self-funded Behaviour relates to a structured and regular maintenance of upland paths, which still involves substantial cost.

Non-private properties A and F take a similar approach, which consists of light touch maintenance contributions made by property rangers and volunteer groups. This is reinforced by professional path workers, either staff or annually budgeted contractor works conducting more technical repairs.

On private properties, there are few instances of this behaviour. Where rangers are employed by private estates, a contribution of 'light touch' maintenance to paths is made. While generally willing to facilitate access, privately funding extensive path management projects seems to be a step too far. Across all private properties, there was only one example of a privately funded path building project.

Active and facilitating

In this behaviour category, land managers actively monitor the condition of their upland paths, and seek funding for works where required. They engage with funding organisations to detail path specification and route, to determine the budget required. They liaise with statutory bodies to get permissions (i.e. working on designated sites) and liaise with path work contractors to ensure they got a satisfactory finish:

[We] liaise with the Outdoor Access Trust (...). I spend a lot of time liaising with the contractors, and just facilitating their work really, (...) prioritising their work and telling them what I want them to do. Attending lots and lots of site visits (...) (Interview B – Private)

This behaviour is typical of non-private properties, when extensive path works are required. Although the resultant path works may be funded externally, there is a resource demand to get to that stage. This requires a process of gathering evidence of poor and degrading path condition, making a proposal as to the extent of works required, and making a case that the capital spend is justified. Non-private land managers have the resources to direct into this, while few private land managers do. This behaviour is only typical on private properties where a ranger is employed.

Active and conservative

Akin to the 1930s Scottish Mountaineering Club, there are those that feel that built paths compromise landscape quality, wildland value and a mountaineering experience involving skill and risk (Croft, 2004). Active and Conservative engagement in footpath management would only extend to light touch maintenance. Land managers exhibiting this behaviour type may actively object to extensive path building or upgrade projects. This behaviour was not clearly identified as a dominant policy of any participant property, although two participants did suggest this stance would be a consideration for some routes:

In terms of high upland paths ... the approach has been not to establish paths. Formal, great big, worked up, paths onto there ... We make access available through car parking and bothies but our view of the [mountains] is that they are still quite a wildland area. It would not be popular to ram a whole load of built paths up there. (Interview L – Private)

Active and opposing

This potential behaviour was proposed by Key Informant Y, but was not identified among participant land managers. This behaviour type may stem from an anti-public access attitude and be exhibited by those who feel that repairing paths has an unwanted side effect of encouraging increased use which may conflict with other land management objectives. This behaviour would potentially propagate through negative peer pressure, where land managers dissuade their peers from engaging in path management. This behaviour could possibly also stem from a reluctance to engage with external funders for fear of jeopardising privacy or management autonomy.

While this behaviour was not identified among the participants in this research, it is plausible that it could be present and go unidentified. With public opinion and policy overwhelmingly in favour of facilitating public access, this may be a taboo stance to admit. Participants may have been reluctant to divulge their true opinion and it is possible that land managers who held this view may have been less likely to engage with this research in the first place.

Passive and permitting

This is the most common behaviour of private properties. It requires only the permission of the land manager to be given, with works undertaken by third parties (i.e. OATS, Volunteer groups). This hands-off approach on the part of the property manager occurs where a property has insufficient resources to engage in path management more actively, but is willing to allow others to undertake the work on their land.

Those in this behaviour category can emerge from across the intention spectrum. Those with a positive intention will allow footpath management where it is offered, free of financial and resource commitment. Allowing free footpath management may also be acceptable, even enticing, to those with low intention. While factors like damage prevention and social perception may be too weak to stimulate strong intention in these land managers, these same factors may be seen as easy wins or ancillary benefits.

Passive and not engaged

This behaviour type is characteristic of a couple of properties in this study. It occurs where there is no perceived need for footpath management because neither damage

nor disturbance are seen as substantial, and where no other benefit to the property is perceived. Possibly more than other categories, Passive and Not Engaged behaviour is thought to be temporary, persisting only until conditions or circumstances change. This could be increasing path use or more frequent extreme weather, leading to more visible impacts. Once land managers become aware of the impacts and consider footpath management as the mean to address them, this may change their behaviour. For example, Property G appeared to be closest to a turning point, currently not engaged in footpath management but aware this was probably not a sustainable position. This land manager indicated that they would eventually seek out grant funding, suggesting a transition to Active/Facilitating behaviour.

Conclusions

Many upland footpaths are currently in poor condition but can only provide the use and non-use benefits if they are maintained well. This requires the engagement of as many land managers as possible in the sustainable management of this resource. This study provided insights into current land manager intentions and how to engage land managers in the provision of a public good; upland footpaths. Utilising the Theory of Planned Behaviour, several factors for motivating footpath management were highlighted:

- Although the general attitude towards public access and footpath management is positive, in particular private land managers do not feel that damage resulting from access is their responsibility, given the public good nature of upland footpaths. However, there is a willingness to contribute to a solution where support is accessible.
- Current support models are insufficient in both funds available and accessibility. Although the majority of public access is taken over private land, private land owners experience more barriers to accessing funding. To encourage further participation in upland path management, funding models should take into account the resources available to those with whom they need to engage. The ongoing maintenance requirement is overlooked by current funding models. This should also be addressed.
- Awareness contributes to a positive attitude. There is awareness of many of the more obvious impacts of path degradation (i.e. landscape issues) and there is a willingness to intervene. This landscape scale damage is often the trigger point for action. There is less awareness of the more nuanced issues like faunal and floral disturbance. There is an opportunity for public bodies to take the lead in raising awareness of the more nuanced off-path impacts, which may lead to earlier identification of damage and disturbance and therefore earlier intervention.

The availability of funding was identified as the key behavioural control. As can be expected with no economic return on investment – in particular in an open access context where generating income to support path maintenance is challenging – motivation for spending private funds on footpaths is low. We suggest this finding is generalisable beyond the Scottish context. However, the motivation for upkeep is present and even high in some land managers due to awareness of damage, conservation objectives,

and recognised benefits to the property and the landowner's reputation in society. This explains the in-kind resources that they provide or invest in footpaths.

To increase current engagement, more public or charitable funding would need to be made available, since the lack of monetary resource is the key barrier to implementing more footpath management. However, the heavy reliance on charitable funding is a limiting factor. The current funding model appears to work in the favour of non-private landowners (who have a joint public access and conservation remit, and advantages in securing grant funding), while securing funding of this type presents a significant challenge for private landowners. With targeted fund raising non-private land managers may be best placed to commit to footpath management and will remain crucial in the maintenance of this valuable infrastructure.

Public intervention by means of a tailored scheme needs to ensure that ongoing maintenance of footpaths is covered, in addition to capital investment in building projects. A model similar to forestry style grant system (Scottish Forestry, 2020) with capital and recurrent maintenance payments should be explored.

User payment was an almost unanimously popular concept amongst land managers but also regarded as a near impossibility in regard to Scottish access policy and public acceptance.

Based on an analysis of the factors which motivate and deter footpath management behaviour, this study identified 6 different behaviour types (Table 1). This allows suggestions for strategically influencing land manager behaviour, targeted at those where a change in behaviour is most desirable or productive. Importantly, land manager's attitude and resulting behaviour vary by type of path and the extent of work they perceive to be required (i.e. capital or maintenance work). More than one behaviour type was identified on most properties. The proposed typology could be complemented by typologies of estates and their management models of shooting opportunities (Mustin et al., 2017): the amount of income derived from shooting and other activities (commercial shooting, non-commercial shooting and diversified estates) will influence the willingness to engage in path management.

In part, behaviours are driven by the occurrence of visitor pressure and footpath damage. Passive and Not Engaged behaviour appears to be the status quo among land managers who currently experience low access utilisation and/or negligible impacts. Where this pressure increases and damage occurs for the first time in a new place, these land managers may adopt a different behaviour. Addressing the key behavioural control, i.e. funding, would be the main support needed. This also applies to keeping those land managers engaged who currently exhibit Active/Facilitating and Passive/Permitting behaviour. In the absence of grant funding, they would shift to Passive and Not Engaged.

In a further scenario, land managers may be aware of visitor pressure and footpath damage occurring. However, when there is little perceived benefit to a private property, the resource demands of grant applications can discourage potential engagement. Even with the potential for path works paid for by external funds, the demand on staff time, resources, knowledge of application details and form filling limits active engagement by private land managers. In this case, a potential Active/Facilitating behaviour is reduced to Passive/Permitting or Passive/Not engaged by an onerous application

process. Conversely, a less demanding application or the availability of application support may result in Active/Facilitating behaviour.

Active/Conservative behaviour appears to be most applicable to areas which currently do not experience heavy access utilisation. If access utilisation increases the local appropriateness of this behaviour may be re-evaluated. Although there could potentially be an opportunity to pre-empt damage, but this may be in conflict with Active/Conservative beliefs.

This research did not identify the existence of ‘negative peer pressure’ or Active and Opposing behaviour to footpath management. If these pressures and behaviours do exist, areas of path damage and disturbance may go unchecked, resulting in potentially irreversible landscape and ecological impacts. Further research should therefore explore the extent of this behaviour, and identify land manager characteristics and underlying attitudes.

As a public good, and in recognition of the value upland paths contribute to the wider economy, it is reasonable to expect a greater contribution from the public purse. If sufficient funding ever becomes available, a more proactive approach to footpath management would be desirable; establishing quality paths before extensive damage occurs.

Acknowledgements

We would like to thank all of the land management professionals who offered their time and insight in support of this research.

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

- Aadland, D., Anatchkova, B., Grandjean, B., Shogren, J., Simon, B., & Taylor, P. (2012). Valuing access to US public lands – A pricing experiment to inform public policy. *Social Science Quarterly*, 93(1), 248–269. <https://doi.org/10.1111/j.1540-6237.2011.00826.x>
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I. (2020). *Icek Ajzen – Theory of planned behaviour* [online]. Accessed August 11, 2020. <https://people.umass.edu/aizen/tpb.html>.
- Bennett, R., & Tranter, R. (1997). Assessing the benefits of public access to the countryside. *Planning Practice & Research*, 12(3), 213–222. <https://doi.org/10.1080/02697459716464>
- Buckley, C., Hynes, S., Rensburg, T., & Doherty, E. (2009). Walking in the Irish countryside: Landowner preferences and attitudes to improved access provision. *Journal of Environmental Planning and Management*, 52(8), 1053–1070. <https://doi.org/10.1080/09640560903327690>
- Christie, M., Crabtree, B., & Slee, B. (2000). An economic assessment of informal recreation policy in the Scottish countryside. *Scottish Geographical Journal*, 116(2), 125–142. <https://doi.org/10.1080/00369220018737086>
- Clough, B. (2004). Public access and private ownership. *Municipal Engineer*, 157(2), 117–120. <https://doi.org/10.1680/muen.2004.157.2.117>
- Cole, D. (2004). Impacts of hiking and camping on soils and vegetation: A review. In R. Buckley (Ed.), *Environmental impacts of ecotourism* (pp. 41–60). CABI Publishing.

- Crabtree, B., Leat, P., & Santarossa, J. (1993). The management and utilization of Scottish wildlife sites. *Journal of Environmental Planning and Management*, 36(2), 187–198. <https://doi.org/10.1080/09640569308711938>
- Crabtree, J., Chalmers, N., & Appleton, Z. (1994). The cost to farmers and estate owners of public access to the countryside. *Journal of Environmental Planning and Management*, 37(4), 415–429. <https://doi.org/10.1080/09640569408711986>
- Creswell, J. (2013). *Qualitative inquiry & research design*. Sage Publications Inc.
- Croft, T. (2004). Conservation charity land ownership in Scotland. *Scottish Geographical Journal*, 120(1-2), 71–82. <https://doi.org/10.1080/00369220418737193>
- Curry, N., Joseph, D., & Slee, B. (2001). To climb a mountain? Social inclusion and outdoor recreation in Britain. *World Leisure Journal*, 43(3), 3–15. <https://doi.org/10.1080/04419057.2001.9674233>
- Denscombe, M. (2017). *The good research guide, for small scale social research projects*. Open University Press.
- East, R. (1993). Investment decisions and the theory of planned behaviour. *Journal of Economic Psychology*, 14(2), 337–375. [https://doi.org/10.1016/0167-4870\(93\)90006-7](https://doi.org/10.1016/0167-4870(93)90006-7)
- Ezebilu, E., Boman, M., Mattison, L., Lindhagen, A., & Mbongo, W. (2015). Preferences and willingness to pay for close to home nature for outdoor recreation in Sweden. *Journal of Environmental Planning and Management*, 58(2), 283–296. <https://doi.org/10.1080/09640568.2013.854196>
- Finney, S., Pearce-Higgins, J., & Yalden, D. (2005). The effect of recreational disturbance on an upland breeding bird, the golden plover *Pluvialis apricaria*. *Biological Conservation*, 121(1), 53–63. <https://doi.org/10.1016/j.biocon.2004.04.009>
- Gentle, P., Bergstrom, Cordell J. K., & Teasley, J. (1999). Private landowner attitudes concerning public access for recreation: Cultural and political factors in the United States. *Journal of Hospitality and Leisure Marketing*, 6(1), 47–65.
- Glass, J., McMorran, R., & Thompson, S. (2019). *The effects associated with concentrated and large-scale land ownership in Scotland: A research review*. Report prepared for the Scottish Land Commission.
- Glenn, S., MacKessack-Leitch, J., Pollard, K., Glass, J., & McMorran, R. (2019). *Investigation into the issues associated with large scale and concentrated landownership in Scotland*. Scottish Land Commission.
- Greiner, R. (2016). Factors influencing farmers' participation in contractual biodiversity conservation: A choice experiment with northern Australian pastoralists. *Australian Journal of Agricultural and Resource Economics*, 60(1), 1–21. <https://doi.org/10.1111/1467-8489.12098>
- Hanley, N., Alvarez-Farizo, B., & Shaw, D. (2002). Rationing an open-access resource: Mountaineering in Scotland. *Land Use Policy*, 19(2), 167–176. [https://doi.org/10.1016/S0264-8377\(02\)00004-2](https://doi.org/10.1016/S0264-8377(02)00004-2)
- JMT. (2020). *Wild ways campaign* [online]. John Muir Trust. Accessed August 11, 2020. <https://www.johnmuirtrust.org/support-us/campaigns/855-wild-ways-path-appeal>.
- Koontz, T. (2001). Money talks? But to whom? Financial versus nonmonetary motivations in land use decisions. *Society and Natural Resources*, 14(1), 51–65. <https://doi.org/10.1080/08941920117246>
- Lance, A., Thaxton, R., & Watson, A. (1991). Recent changes in footpath width in the Cairngorms. *Scottish Geographical Magazine*, 107(2), 106–109. <https://doi.org/10.1080/00369229118736817>
- Menz, F., & Mullen, J. (1981). Encounters and willingness to pay for outdoor recreation. *Land Economics*, 57(1), 33–40. <https://doi.org/10.2307/3145750>
- Miller, D. (2012). Public access to private land in Scotland. *Potchefstroom Electronic Law Journal*, 15(2), 118–147. <https://doi.org/10.17159/1727-3781/2012/v15i2a2482>
- Morrocco, S., & Ballantyne, C. (2008). Footpath morphology and terrain sensitivity on high plateaux: The Mamore mountains, Western Highlands of Scotland. *Earth Surface Processes and Landforms*, 33(1), 40–54. <https://doi.org/10.1002/esp.1525>

- Mulder, C., Shibli, S., & Hale, J. (2006). Rights of way improvement plans and increased access to the countryside in England: Some key issues concerning supply. *Managing Leisure*, 11(2), 96–115. <https://doi.org/10.1080/13606710500520163>
- Mustin, K., Newey, S., & Slee, B. (2017). Towards the construction of a typology of management models of shooting opportunities in Scotland. *Scottish Geographical Journal*, 133(3–4), 214–232. <https://doi.org/10.1080/14702541.2017.1406133>
- NTS. (2020). *Footpath fund* [online]. National Trust for Scotland. Accessed August 23, 2020. <https://www.nts.org.uk/campaigns/footpath-fund>.
- OATS. (2020). *The mountains and the people* [online]. Outdoor Access Trust for Scotland. Accessed August 23, 2020. <https://www.outdooraccesstrustforscotland.org.uk/projects/the-mountains-and-the-people/>.
- Olive, N., & Marion, J. (2009). The influence of use-related, environmental, and managerial factors on soil loss from recreational trails. *Journal of Environmental Management*, 90(3), 1483–1493. <https://doi.org/10.1016/j.jenvman.2008.10.004>
- Phillip, S., & MacMillan, D. (2006). Car park charging in the Cairngorms National Park. *Scottish Geographical Journal*, 122(3), 204–222. <https://doi.org/10.1080/00369220618737266>
- Reynisdottir, M., Song, H., & Agrusa, J. (2008). Willingness to pay entrance fees to natural attractions: An Icelandic case study. *Tourism Management*, 29(6), 1076–1083. <https://doi.org/10.1016/j.tourman.2008.02.016>
- Rodway-Dyer, S., & Ellis, N. (2018). Combining remote sensing and on-site monitoring methods to investigate footpath erosion within a popular recreational heathland environment. *Journal of Environmental Management*, 215, 68–78. <https://doi.org/10.1016/j.jenvman.2018.03.030>
- Ruff, A., & Maddison, C. (1994). Footpath management in the national parks. *Landscape Research*, 19(2), 80–87. <https://doi.org/10.1080/01426399408706431>
- Scottish Forestry. (2020). *Woodland creation* [online]. Accessed August 21, 2020. <https://forestry.gov.scot/support-regulations/woodland-creation>.
- Scottish Government. (2020). *Improving public access* [online]. Scottish Government. Accessed June 22, 2020. <https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/agri-environment-climate-scheme/management-options-and-capital-items/improving-public-access/>.
- SNH. (2005). *Scottish outdoor access code*. Scottish Natural Heritage.
- SNH. (2010). *Paths – Linking people, places and nature*. Scottish Natural Heritage.
- SNH. (2018). *Survey of upland path users in Scotland 2017*. Scottish Natural Heritage.
- Sutherland, L., & Holstead, K. (2014). Future-proofing the farm: On-farm wind turbine development in farm business decision-making. *Land Use Policy*, 36, 102–112. <https://doi.org/10.1016/j.landusepol.2013.07.004>
- Thompson, D., Galbraith, H., & Horsfield, D. (1987). Ecology and resources of Britain's mountain plateaux: Land use conflicts and impacts. In M. Bell, & R. Bunce (Eds.), *Agriculture and conservation in the hills and uplands* (pp. 22–31). Institute of Terrestrial Ecology.
- UPAG. (2016). *Upland path management – Standards for delivering path projects in Scotland's mountains*. Upland Path Advisory Group, Scottish Natural Heritage.
- Valentine, G. (1997). Tell me about...: Using interviews as a research methodology. In R. Flowerdew, & D. Martin (Eds.), *Methods in human geography* (pp. 110–126). Addison Wesley Longman Limited.
- van Dijk, W., Lokhorst, A., Berendse, F., & de Snoo, G. (2016). Factors underlying farmers' intentions to perform unsubsidised agri-environmental measures. *Land Use Policy*, 59, 207–216. <https://doi.org/10.1016/j.landusepol.2016.09.003>
- Van Gossom, P., Luyssaert, S., & Mortier, F. (2005). Forest groups as support to private forest owners in developing close-to-nature management. *Forest Policy and Economics*, 7(4), 589–601. <https://doi.org/10.1016/j.forpol.2003.10.003>
- Vergunst, J. (2013). Scottish land reform and the idea of 'outdoors'. *Ethnos*, 78(1), 121–146. <https://doi.org/10.1080/00141844.2012.688759>

- Wagstaff, P. (2013). What motivates private landowners. In J. Glass, M. Price, C. Warren, & A. Scott (Eds.), *Lairds, land and sustainability – Scottish perspectives on upland management* (pp. 86–107). Edinburgh University Press Ltd.
- Warren, C. (2009). *Managing Scotland's environment*. Edinburgh University Press Ltd.
- Watson, A. (1991). Increase of people on the Cairn Gorm plateau following easier access. *Scottish Geographical Magazine*, 107(2), 99–105. <https://doi.org/10.1080/00369229118736816>
- Wightman, A. (2020). *Who owns Scotland – Property search*. Accessed April 20, 2020. <http://www.whoownsscotland.org.uk/>.
- Wilson, V., & Seddon, B. (2018). *Scotland's people and nature survey 2017/18 – Outdoor recreation and health modules*. Scottish Natural Heritage Research Report No. 1062.
- Worrell, R., & Appleby, M. (2000). Forests for people. Access, recreation & tourism on the national forest estate. *Journal of Agricultural and Environmental Ethics*, 12(3), 263–277. <https://doi.org/10.1023/A:1009534214698>
- York, C. (2019). *Scottish upland path audit*. Walk the Talk report for Scottish Natural Heritage, Inverness.