Insights offered by behavioural science to improve the perception of and positive action on Protected Areas

A think-piece for the Protected Areas Committee (PAC) of NatureScot

Andrew Barnes and Jayne Glass

Department of Rural Economy, Environment and Society, SRUC, Edinburgh

Contents

Background

The Protected Areas Committee (PAC) of NatureScot is currently reviewing the future of protected areas. The intention is to bring together experts in their respective fields with NatureScot staff to discuss and agree a response to a series of key questions, which will be designed to enable the PAC, and then the Board, to take an informed view of how NatureScot takes forward its work on the topic.

This think-piece was commissioned by NatureScot to inform the 2022-2026 NatureScot Corporate Plan. It concentrates on insights from behavioural science to develop lessons for stakeholder and wider public engagement with protected areas. The purpose is to identify and discuss existing research and knowledge. The PAC proposed the following questions:

1. *How can NatureScot work with owners and land managers of protected areas to change their perception of the sites from being a constraint/burden to an asset and motivate them to proactively manage them?*

2. *How can local and wider stakeholder interests be encouraged to get involved in decision making and management of protected areas?*

3. *How do we achieve greater public appreciation and support for protected areas?*

Protected areas in Scotland

Protected areas (PA) are designated sites in Scotland which are managed to ensure that natural features remain in good health for now and in the future. Both terrestrial and marine environments form a network for conservation across Scotland. Designation emerges from multiple channels, such as domestic legislation and policy, but also international directives for land and marine protection[1].

Designation of a site is legally recognised and managed by a range of organisations, though NatureScot manages a significant number of sites[2]. Designations occur on land which could be privately or publicly owned or, in the case of marine, collectively owned. As such this requires engagement with multiple individuals and groups. Friction between these parties may emerge and, ultimately, Scottish Ministers, NatureScot or courts may have the rights to compel conservation efforts.

There is a legal requirement on NatureScot and the Scottish Government to ensure sites are in favourable condition. According to official statistics 78.8% of Scotland's 5,389 designated natural features (across 1,870 sites) were in favourable condition in March 2020[3]. The proportion of features in favourable condition has increased by 7.4% between 2005 and 2020. Hence, from time to time NatureScot may use, for example, nature conservation orders to compel affected landowners to conserve natural features of an SSSI, Natura site or associated land. Similarly, in marine environments an instrument such as a marine conservation order (MCO) may be applied[4].

Human actors in protected areas

A review was commissioned by SNH in 2014[5] on the future of protected areas. The review panel highlighted two main issues around human interaction with natural heritage:

---

[1] Including national (SSSIs, NSAs, NPs, NNRs), European (Natura 2000 SACs, SPAs,) and international (sites designated under the Ramsar Convention on Wetlands). Also note MPAs SACs, SPAs, SSSI and Ramsar cover marine.
[2] NatureScot is responsible for monitoring the condition of SSSIs and Natura/Emerald network, using UK-wide agreed standards. NatureScot reports the results of its Site Condition Monitoring (SCM) programme annually
[3] Nature Scot (2020). The Proportion of Scotland's Protected Sites in Favourable Condition 2020.
[4] See here for info on marine conservation orders and restoration orders.
[5] SNH (2014). Protected Areas for Nature Review.

1) Limited connection with the (predominantly) urban population and the natural environment. Specifically, protected areas that are *on "private land with limited practical opportunities for public access"*, and

2) The designations are "*rooted in knowledge elites – mainly scientists – who focused discussion on what is valued in nature to a narrow range of interests, excluding most people*".

When considering humans and conservation there are multiple issues associated with how an area becomes a 'protected' site. Firstly, the process of protecting an area assumes that nature can be isolated and managed separately to surrounding land. This sets up a tension between the uses of that land in terms of the economic value compared to the non-economic uses of that land. Effectively this may embed a 'humans versus nature' narrative compared to humans working *with* nature. These include the values that are transmitted once a site is designated, whether these values are real or perceived and which may be in conflict with those of the landowner. Similarly, how messages about these sites are framed to those directly and indirectly affected by designation is also an issue. This even often distils down to how language is used by regulating agencies, with terms such as 'protected' and 'threat' reflecting a 'siege mentality' of 'us and them' and causing conflicts and divisions'.

Accordingly, it seems that the relationships between human actors and the PA conservation landscape are under-developed. Behavioural sciences cover a range of disciplines and approaches, but ostensibly attempt to understand how behaviours occur and how they may change under different environmental or institutional conditions. This leads to evaluations of the ways we could intervene to shift behaviours towards more positive and socially good outcomes. The purpose of this think-piece is to provide context for a webinar of invited discussants around the role that behavioural sciences can play in addressing these issues to create more value and support for PAs in the future.

Source: Scottish Coastal Forum/Vic Rastall

Question 1. How can we influence positive behaviour towards protected areas among different types of owners, managers and other stakeholders?

Protected areas are mostly designated based on scientific criteria[6] but declared and enforced through national or international legislation. PAs are aimed at conserving or recovering nature. However, this can result in restrictions of choice, or limited options for people to undertake certain activities in order to conserve/help recover the feature(s) the site is designated for. Figure 1 shows a popular schema used to understand ways to intervene to address behavioural change[7] and how it can restrict choices to meet directed conservation goals.

Figure 1. The ladder provides a way to schematically view interventions to enable behavioural change. This ranges from no intervention to regulation. Both fiscal and non-fiscal routes can be employed depending on the complexity of the problem[8]

Accordingly, there may be analogues in terms of how individuals respond to regulation. A number of studies suggest splitting target audiences based on their beliefs or perceptions of conservation. For example, a study which examined environmental compliance among Australian farmers found four 'postures'. They identified an '*aligned*' type, who would comply, along with three non-compliance types, the '*disengaged*', the '*gameplaying*' and the '*resistant*' type[9].

A broader study of the global conservation community found that people-led conservation, which emphasises the role of people in conservation as participants and stakeholders, has widespread support among conservationists. Similarly, science-led conservation, which relates to the role of science in the conservation of species and ecosystems, is well-supported among biological scientists and senior conservationists, although less so by social scientists[10]. Engaging communities and individuals through an agreement-led framework reduces the need for regulation and the associated costs of monitoring and enforcing this regulation.

---

[6] JNCC UK Protected Areas. At: https://jncc.gov.uk/our-work/uk-protected-areas/

[7] For example, https://www.kingsfund.org.uk/sites/default/files/2020-03/tax-regulation-briefing-2020.pdf

[8] Nuffield Council on Bioethics (2007). Public health and ethical issues. London: Nuffield Council on Bioethics

[9] Bartel, R. and Barclay, E. (2011). Motivational postures and compliance with environmental law in Australian agriculture. Journal of Rural Studies 27(2), 153-170.

[10] Sandbrook, C., Fisher, J. A., Holmes, G., Luque-Lora, R., & Keane, A. (2019). The global conservation movement is diverse but not divided. *Nature Sustainability*, *2*(4), 316-323.

It would seem reasonable to think that the effect of a compulsory intervention will lead to a number of 'archetype' behaviours in response to designation.   Hence, one useful approach would be to examine particular audiences and the main issues that might occur in relation to the designation and the subsequent impact on their management behaviours and perceptions. This may provide insight into a way to more effective intervention[11]. Table 1 below gives an example and some suggestions on how to approach these behaviours.

---

[11] Rare and The Behavioural Insights Team. (2019). Behavior Change For Nature: A Behavioural Science Toolkit for Practitioners. Arlington, VA: Rare

Table 1. Suggested intervention board for understanding and mitigating audience reaction to encourage positive behaviours

Audience	Potential cause(s) of Negative Reaction	Target positive behaviours
Private landowners	-overlapping designations causing confusion	-engage in wider discussion of management of PA at landscape scale
	-perceived 'nationalisation' of privately-owned land	-understand the monetary/non-monetary values of PA in the eyes of landowners
Conservationists	-the voluntary approach has been criticised, particularly in terms of *overgrazing* of designated sites	-increase understanding of PA and motivations of private landowners
	-NatureScot perceived as not using its powers enough	- initiatives to increase engagement between conservationists and other land managers, such as voluntary non-monetary approaches relying on the intrinsic values a land manager places on conservation[12]
Commercial fishers	-restricted access affects local economy	-respecting within group heterogeneity as fishers are affected differently
	-concern over lack of consideration for local heritage	-engage representatives of segments within the local fishing fleet to be involved in the MPA decision-making process[13]
…etc…		

[12] Santangeli, A., Arroyo, B., Dicks, L. V., Herzon, I., Kukkala, A. S., Sutherland, W. J., & Moilanen, A. (2016). Voluntary non-monetary approaches for implementing conservation. *Biological Conservation*, *197*, 209-214.
[13] Pita, C., Theodossiou, I., & Pierce, G. J. (2013). The perceptions of Scottish inshore fishers about marine protected areas. *Marine Policy*, *37*, 254-263.

Vivid exceptions may entrench negative behaviours

Behaviours may also be sharpened by seeing responses of others to regulatory breaches or approaches to compliance. One example from the behaviours literature on heavy smoking is that of a 'vivid exception', e.g. '*I knew someone who smoked 80 a day and lived to be 94*'. This gives the individual some self-justification for continuing with a negative behaviour. With respect to protected areas there is potentially a lack of consistency when enforcing regulations, or a private landowner may have 'got away' with a breach and this is used as one of these 'vivid exceptions' that may justify continued frictions against PAs with private landowners.

For example, in the past the use of voluntary control agreements for managing wild deer (with little threat of an enforced control scheme[14]) appeared to make landowners more willing to enter into agreements. However, the increased threat of an enforced control scheme has led to growing reluctance to take part in voluntary agreements. **Consequently, a holistic approach to regulation and regulatory breach may prove profitable in creating more engagement with affected communities.**

Leveraging self-affirmation to support positive behaviours

Cognitive dissonance occurs where an individual may feel inner conflict towards a situation and this will lead to a number of routes towards self-affirmation. This is a way of softening the dissonance that individuals feel if they hold views which challenge the norm. For example, it may be the case that private landowners believe that fundamentally it is a good thing to protect natural heritage but to explain their lack of willingness to engage they may provide other ways to justify themselves morally, e.g. a farmer may (hypothetically) say '*I may not have actively managed this protected area, but I produce the best bulls in the area*'.

Self-affirmation may be a route to unpick why some private and commercial interests do not engage fully in the process of maintaining protected areas and, indeed, may be a way to engage them further. Work on health and dietary change has found the messages of self-affirmation support the transition to positive outcomes.

Linking *positive signals of self-affirmation* with protected areas through more frequent, and supportive, communication may be a way to encourage more engagement. Further still, linking positive affirmation with a commercial interest's cultural symbols may further increase engagement, e.g. support for pollinators for more productive land, or a privately-owned estate within a PA that generates significant tourism revenue from visitors to the landscape.

---

[14]Best Practice Guidance on the Management of Wild Deer in Scotland. At:
https://www.bestpracticeguides.org.uk/statutory-guides/section8/

Nudge-based approaches

One application of behavioural economics is the concept of a 'nudge'. Policy nudges are mechanisms for influencing behaviours without reducing the available options or substantially altering the costs involved. Importantly, 'symbolic' policy nudges can be used to address and engage with intrinsic and non-monetary values (Duesberg et al. 2014)[15]. Nudges are not a replacement for regulatory frameworks and incentives but can be used to influence choices and facilitate longer term behavioural change. For protected areas, this approach would involve identifying the most appropriate intervention points for applying nudges. Specific action may include dissemination of clear, user-friendly information, reducing bureaucracy, highlighting benefits and using exemplar projects and public commitments to protected areas to increase likelihood of action.

Trusted 'messengers' and peer to peer communication/leaning is also likely to be vital to ensure effective outreach and wider collective interest in protected areas. Peer to peer influence is already well-recognised as a powerful driver of change within the farming community[16]. Nudges may also need to be tailored to different types of land managers to reflect their differing motivations and circumstances and the different stages they may be at in the decision-making process (as considered in Table 1).

A nudge-based approach is likely to require interactions across a network with land managers, consultants/agents, peer groups and wider stakeholders, and use of multiple different sources of information and forms of deliberation and engagement[17].

---

[15] Duesberg, S., Ní Dhubháin, Á., O'Connor, D., 2014. Assessing policy tools for encouraging farm afforestation in Ireland. *Land Use Policy* 38:194–203.

[16] Blackstock, K., Ingram, J., Burton, R., Brown, K.M. and Slee, B. (2010). Understanding and influencing behaviour change by farmers to improve water quality. Science of the Total Environment 408: 5631-5638.

[17] Ambrose-Oji, B., Atkinson, G. and Petr, M. (2019) Woodland managers' understanding of resilience and their future information needs. Research Note FCRNO36, Forest Research.

Question 2. How can local and wider stakeholder interests get involved in decision making and management of protected areas?

Human experience challenges the idea of an objective reality. What we know about the world - the concepts that we know and understand - are grounded in concrete experience of the world[18]. This brings in both a spatial and a time dimension for how an individual views protected areas. Accordingly, we would view protected areas in terms of the immediate and surrounding environment, but also past experience and possible subsequent futures. In short, our individual experiences both now, in the past and against a desired or dreaded future, is what a protected area is to us as individuals.

Source: Unsplash - veetrzy

Utilising these temporal aspects may provide a way to create engagement with communities, in respect of how PAs support a net zero carbon and biodiverse future. Moreover, dampening past negative perspectives on PAs – as highlighted by the 2014 SNH review outlined above – may also be a route to supporting greater engagement.

This could inform discussion about what the most important benefits are for user groups and how different or similar they are for, say, landowners or those managing the site directly. This will directly address the potential source of friction between world-views - sometimes based on historic precedent, or future desires - that these user groups bring. An ongoing example of this is the MarPAMM project which, in parallel to collecting scientific data has the aim, within its Argyll case study, to provide an agreed and shared vision for Marine Protected Area (MPA) planning across the region[19].

Social norms and enabling de-normalisation of behaviours

Some behavioural interventions have focused on pushing broad social norms – essentially the unwritten rules on how we behave because of others - for positive behaviours, e.g. to push tobacco use out of a 'charmed, socially validated' practice to being seen as abnormal. We may want to consider how socially positive practices – such as increased and active engagement in protected areas as part of wider climate or conservation efforts - become the norm and that engagement leads to further positive behaviour feedback effects.

One example is citizen science which has grown in provenance over the last decade, enabled with the ubiquity of mobile phone technology to record and catalogue a range of nature-based phenomena[20].

---

[18] This concept is known as the 'lifeworld': the world of lived experience inhabited by us as conscious beings, incorporating the way in which events, objects and emotions appear to us in our everyday life. See
https://thepsychologist.bps.org.uk/volume-28/august-2015/learning-lifeworld
[19] See https://www.mpa-management.eu/?page_id=863
[20] See for example https://www.zooniverse.org/ or https://www.nature.scot/communitymarinesurvey.

In relation to this and the previous discussion around self-affirmation, actively offering positive feedback to participants in citizen science would encourage further engagement to sustain behaviours[21].

This also questions how we enable the institutional environment to support these practices. There are complex webs of regulation and enforcement bodies driving these designations. For changing social norms, we have to ask ourselves whether these organisations project the same message or *should* attempt to align their messages for different user communities. Hence **any contradictions in the level of compliance needed or messages around voluntary engagement creates a blurred landscape for people to fully engage with protected areas.**

Some of the best practice and protocols offered by the Scottish Land Commission may offer some directions, e.g. in relation to supporting community engagement (although the focus here is not specifically on designated sites)[22]. This would effectively attempt to normalise rules around land use, ownership and rights to land use. In addition, a significant number of measures have been developed around the landscape scale and for collaborations. One example would be designations that cross boundaries and therefore require participation from more than one individual. This may temper social norms through aligning group perspectives, although at worse, it may encourage a further 'us and them' perspective as individual landowner perspectives may align closely.

How we **holistically approach protected areas** to be within wider land use planning and strategies may be a route to engagement. Notably, Paul Selman examined protected areas and argued that "*whilst on balance they [conservation designations] remain broadly fit for purpose and good value for money, they will increasingly need to be embedded in land use strategies which are more responsive to changing social needs and environmental conditions.*"[23] Accordingly, if designations are considered in the context of Scotland's future regional land use partnerships[24] then going forwards this may also be important. An example is the three-pillar approach promoted for Scotland's marine nature conservation covers species conservation, site protection and wider seas policies and measures[25]. Hence, this latter pillar encourages some of this holistic thinking around wider influences on conservation rather than site or sector specific policies.

[21] For example: Tang, J., Zhou, X., & Yu, M. (2019). Designing feedback information to encourage users' participation performances in citizen science projects. *Proceedings of the Association for Information Science and Technology*, *56*(1), 486-490.

[22] See the Scottish Land Commission at: https://landcommission.gov.scot/our-work/good-practice

[23] Selman, P. (2009). Conservation designations—Are they fit for purpose in the 21st century? *Land use policy*, *26*, S142-S153.

[24] See: https://landcommission.gov.scot/news-events/news-blog/new-protocols-launched-on-land-ownership-in-scotland

[25] Marine Scotland (not dated), A Strategy for Marine Nature Conservation in Scotland's Seas.

Question 3. How do we 'frame' protected areas to articulate their value?

Firstly, one must ask **what cultural and social values are currently being transmitted in relation to protected areas?** Given the overlap in organisations engaged in both terrestrial and marine environments, there may be contradictions in the messages which are causing some dissonance on the value of protecting sites. This may come from differing sets of values that these institutions may have, or from promoting overlapping agendas. However, one positive model is where NatureScot works with Marine Scotland to engage end users, such as yachting and commercial fishing interests, on designations of MPAs[26]. Multiple organisations agreeing an approach and holding a common purpose would lead to reduced dissonance around these messages.

A common argument is that we need to develop messages which are targeted to ensure we address people's values and the roles they identify with. Identifying these values and beliefs however is less practical in the field but there has been applied work indicating that a group or an individual's preferences are generated through some kind of 'transformative process of deliberation and learning'[27].

Deliberative valuation

Deliberative valuation is an interactive valuation method. The purpose is to bring different stakeholders, such as Government officials, industry members, and citizens to form an agreed value towards an object of interest. The advantage of the approach is the dialogue that emerges which reveals differing ethical beliefs or social norms. This can be used as a means to begin understanding and reflection on personal values. It should support constructive decision-making which is more equitable for society, compared to simply ignoring these differing perspectives.

Source: A Barnes

An example related to MPAs found that engagement and interaction with nature, transformative values (including memorable experiences) and the social bonding value of the site were the most important benefits to divers and anglers of marine sites[28].

One could also point to a perceived 'narrow' focus of protected areas. Recently, NatureScot have been recommended to look beyond designated sites when measuring natural heritage impacts[29]. This is relevant when we consider native species, such as wild deer, which do not respect protected area boundaries. Acknowledging that the protected areas sit within the wider environment, climate and ecology and that values are gained from both perspectives may be a route to meet common values.

---

[26] See https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/marine-protected-areas/scotlands-marine-protected-area-network

[27] Kenter, J. Jobstvogt, N., Watson, V., Irvine, K.N., Christie, M. and Bryce, R. (2016). The impact of information, value-deliberation and group-based decision-making on values for ecosystem services: Integrating deliberative monetary valuation and storytelling. *Ecosystem Services,* 21, 270-290.

[28] Kenter, J. O., Bryce, R., Davies, A., Jobstvogt, N., Watson, V., Ranger, S., ... & Irvine, K. N. (2013). The value of potential marine protected areas in the UK to divers and sea anglers. *UNEP-WCMC, Cambridge, UK*, 125.

[29] Deer Working Group (2019). The management of wild deer in Scotland: Deer Working Group report.

Again, this may highlight the needs for extending the three pillar approach supported for marine conservation that attempts to move away from this narrow focus.

Conservation and tangible cultural symbols

A well-cited study[30] found evidence of 'cultural symbols' of farming which promote a productivist view that challenges attempts to adopt more environmentally-friendly farming approaches. Non-tangible cultural symbols are the most difficult to 'display' but Moran *et al*. (2013) suggested that flags within fields may be a route to support the social goods generated in the land. Protected areas may benefit from more tangible symbols – to promote their positive outcomes.

Figure 2. *'Certificating largely invisible climate change mitigation activities may encourage peer-to-peer learning and stimulate cultural exchange. This in turn may help to generate a new shared understanding of what it is to be a carbon-conscious farmer, as well as enable farmers to promote their carbon credentials to the wider public'[31]*

From tangible to tactile

A number of studies have explored the role of tactile displays within communication strategies[32]. This simply infers that allowing or encouraging the touching related objects around the topic of interest provides a pathway into forming a more sustained emotional bond[33]. For example, engagement within recent consultations related to MPAs evolved from simple PowerPoint type lecture spaces to something more sensory, with a space set up for people to discuss and surrounded with materials for individuals to visualise the marine wildlife.

Figure 3. Various examples of tactile display within MPA engagement in Scotland[34].

[30] Burton, R. J. (2004). Seeing through the 'good farmer's' eyes: towards developing an understanding of the social symbolic value of 'productivist' behaviour. Sociologia ruralis, 44(2), 195-215.

[31] Moran, D., Lucas, A. and Barnes, A.P. (2013) Mitigation Win. Nature Climate Change 3, 611-613.

[32] One example is Massingham, E., Fuller, R. A., & Dean, A. J. (2019). Pathways between contrasting ecotourism experiences and conservation engagement. *Biodiversity and conservation*, *28*(4), 827-845.

[33] Numerous applications of this emerge from nursing to retailing literature, e.g. Hultén, B. (2012). Sensory cues and shoppers' touching behaviour: the case of IKEA. *International Journal of Retail & Distribution Management*.

[34] Various sources: https://www.nature.scot/communitymarinesurvey and https://www.mpa-management.eu/

Question 4. How do we align protected areas to the climate emergency and the global biodiversity crisis?

Public support for the environment is high. Similarly, we are in a planetary emergency. High profile ambitions for protected areas have been agreed by World Leaders[35]. The task for NatureScot is how to capitalise on this to translate into more engagement around protected areas in localities.

Local empowerment to support 'better' choices

Movement towards a socially beneficial portfolio relies on a level of empowerment that sustains engagement. This is engendered through positive feedback but requires consistent positive feedback. Darby (2006)[36] in a review of household energy consumption stated that "*As a rule of thumb, a new type of behaviour formed over a three-month period or longer seems likely to persist - but continued feedback is needed to help maintain the change and, in time, encourage other changes*".

We may draw on Weber's idea that we all have a 'finite pool of worry'[37]. Essentially, given the number of existentialist crises within society there may not simply be enough 'space' to worry about biodiversity loss for a sustained period to lead to action. This argues for setting PAs within climate and nature emergency. Post-Covid and green recovery strategies are emphasising these messages within macro-economic policies.   The quality of protected areas may not be explicit enough in the public consciousness but should be part of the solution to climate and nature emergencies. **Consequently, we must ask whether we can make direct links from positive behaviours to protected areas, e.g. reductions in plastic use related to marine pollution?**

Looking beyond conservation, behavioural change theory related to healthcare proposes that change can occur when an individual feels personally susceptible to a serious health threat, particularly when the required change to mitigate the threat comes at an acceptable cost[38]. This 'Health Belief Model' (HBM) has been applied in other contexts, such as recycling, and it is also relevant to land management. The 'threat-response' inherent in the model implies that if a land manager perceives a current practice or income stream as vulnerable to a threat (e.g. climate change), this may prompt a change in behaviour, particularly where an affordable alternative is available to them. Critically, land managers must also feel that they can implement this change competently[39]. **In the current context of uncertainty (Brexit, climate change, Covid-19, etc.), the HBM highlights the potential for major threats to become catalysts for positive change.**

Are we framing protected areas as a solution to a problem that will only get worse or are we linking them with the potential for a better future?

One question at the heart of framing the purpose of protected areas is whether we do so through the lens of conservation optimism or pessimism. Conservation optimists argue that promoting a positive perspective tends to galvanise action for a disempowered group. Conversely, a pessimist approach argues some 'shock' value of pessimistic messages provide a sense of urgency. Hence, both approaches lead to a similar shift towards engagement. Generally, the evidence is mixed, however, there are arguments for a balanced approach of optimistic and pessimistic messages (see Figure 4)[40].

---

[35] See: https://www.campaignfornature.org/news/category/30x30
[36] Darby, S. (2006). The effectiveness of feedback on energy consumption. Review for Defra. Available at:
[37] For examples of this see http://guide.cred.columbia.edu/guide/sec4.html
[38] Morris, J., Marzano, M., Dandy, N. and O'Brien, L. (2012). Theories and models of behaviour and behaviour change. Forest Research report.
[39] Dandy, N. (2012). Understanding private land manager decision-making: a framework for forestry. Forest Research, Farnham.
[40] McAfee, D. and Connell, S.D. (2019). Balancing the Benefits of Optimism and Pessimism in Conservation: a Response to Kidd, Bekessy, and Garrard. Trends in Ecology and Evolution 34(8), pp. 692-693
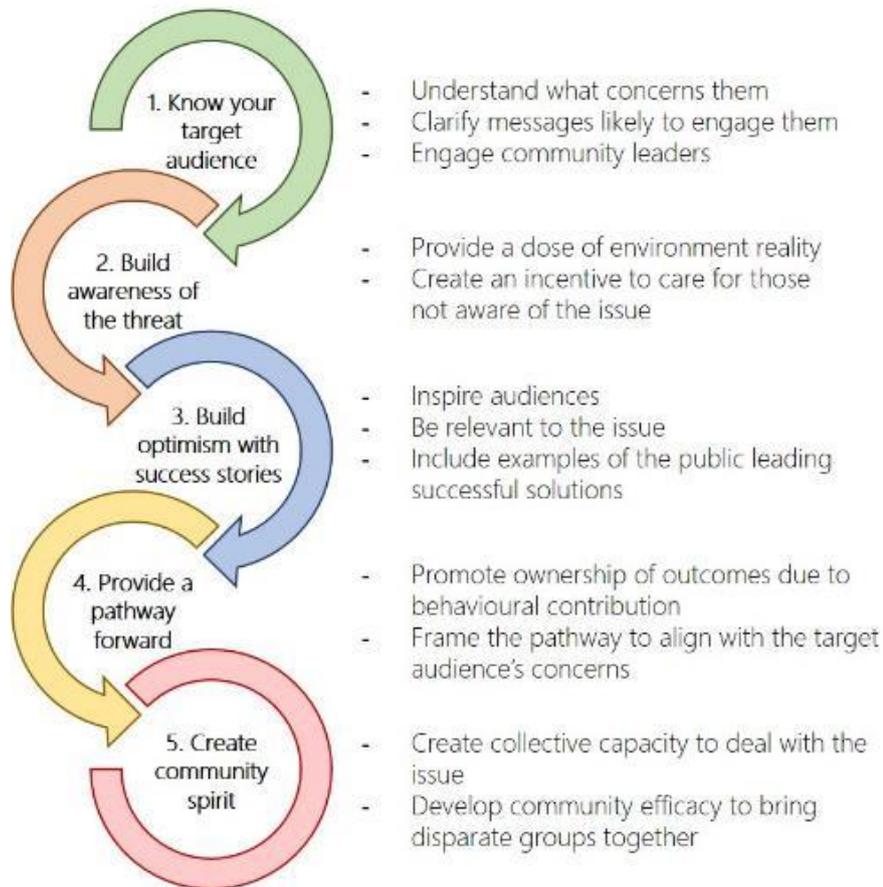
Figure 4. A five-step process that uses theory from both psychology and communications to help conservationists balance optimism and reality to inspire public engagement (adapted from McAfee et al., 2019).

Kidd et al (2019)[41] make the point that "*in biodiversity conservation, the prevailing consensus is that optimistic messages should be used to inspire people to change their behaviour, but there is scarce empirical evidence that optimistic messages lead to favourable conservation behaviour change*." Again, this may change for differing audiences who would feel various levels of engagement towards global crises. **Hence, a question to raise is whether there are compelling examples within the Scottish protected areas network of positive messages leading to sustained behavioural change?** For example, NatureScot's natural care scheme in Lunan Lochs in Perthshire may be a good example of this. The initiative offered a financial incentive for land managers to enter a management scheme under the programme to reduce phosphates being washed into the lochs. There has been increased awareness of the issues in the area and greater valuation of the asset by land managers in the catchment[42].

---

[41] Kidd, L. R., Bekessy, S. A., & Garrard, G. E. (2019). Neither hope nor fear: Empirical evidence should drive biodiversity conservation strategies. *Trends in ecology & evolution*, *34*(4), 278-282.
[42] See SNH case study report.

Summary questions with prompts

Question 1. How can we influence positive behaviour towards protected areas among different types of owners, managers and other stakeholders?

> Who are the audiences and what are the main issues that might occur for them in relation to protected areas?
>
> Might a holistic approach to regulation and regulatory breach prove profitable in creating more engagement with affected communities?
>
> To what extent might policy nudges and linking positive signals of self-affirmation with protected areas encourage more engagement?

Question 2. How can local and wider stakeholder interests get involved in decision making and management of protected areas?

> What are the most important benefits for each of the wider groups and how different or similar are they?
>
> To what extent do any contradictions in the level of compliance needed create a blurred landscape for people to fully engage in the process of designation?
>
> How we can we approach protected areas more holistically within wider land use planning and strategies?

Question 3. How do we 'frame' protected areas to articulate their value?

> What cultural and social values are currently being associated with protected areas?
>
> To what extent might protected areas benefit from tangible cultural symbols that promote positive outcomes?

Question 4. How do we align protected areas to the climate emergency and the global biodiversity crisis?

> Can we widen the link between locally protected areas and the global biodiversity crises and the climate emergency?
>
> Can we make direct links from positive behaviours to protected areas?
>
> Are there are compelling examples within the Scottish nature network of positive messages leading to sustained behavioural change?
>
> Are we framing protected areas as a solution to a problem that will only get worse or are we linking them with the potential for a better future?
>
> Are the current uncertainties a catalyst for positive behaviour change.