



Science to Promote Responsible Recreation

Explore Phase Report

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This 'Explore Report' is one of four final deliverables from a project undertaken by the Behavioural Insights Team for Natural England, promoting responsible recreation by dog-walkers at two pilot sites. The four deliverables are:

1. **Using Behavioural Insights to Reduce Recreation Impacts on Wildlife: Guidance and Case Studies from Thames Basin Heath and the Solent.** This is the main project report. It summarises each phase of the project (Target, Explore, Solution, Trial and Scale), and establishes guidelines for running similar projects in the future.
2. **Explore phase report** (this document). This details the findings from field research including an online survey, visitor interviews, and expert interviews.
3. **Literature review.** This synthesises existing evidence on the use of behavioural interventions to promote responsible recreation by visitors to nature areas.
4. **Trial phase report.** This details the findings from an online experiment testing the impact of behaviourally-informed communications materials on dog walkers' awareness of wildlife disturbance issues, and recommends how to use these findings in the field.

Executive summary

This Explore report has three components. The first two parts of the report contain our investigation into the enablers of responsible recreation behaviour and the barriers to behaviour change at our two pilot areas: Thames Basin Heaths and Bird Aware Solent.

1. We carried out visitor interviews in the field, speaking with a number of dog-walkers and other morning visitors at a sensitive and non-sensitive site in each of the pilot areas. Enablers and barriers we identified include factors related to individuals' awareness about sensitive birds and birds' sensitivity to seemingly 'normal' dog behaviour, but also the physical characteristics of each site and visitors' non-conservation-related motivations. In particular, we found low levels of awareness about what constitutes bird disturbance or personal acknowledgement of individuals' own possible impacts. We also found that dog-walking at each site is often a highly habitual and social activity, and the behaviours of other visitors are highly visible. While visitors were generally quite receptive to messages about bird conservation and supportive of bird-related information signs, we note that this approach is unlikely to be sufficient for behaviour change: people often do not do what they say they will do, and our observations showed that that owners rarely have sufficient off-lead control over their dogs to prevent bird disturbances.

2. We ran an online visitor survey posted on dog-oriented social media groups related to the Thames Basin Heaths area. The main results were that respondents' primary motivation for choosing somewhere to walk their dog was having somewhere to let the dog

off-lead, while convenience and cost are also important. Respondents identified as nature lovers and think dog-walkers have a responsibility to look after natural areas they use. Although they agreed that visitors can have a negative impact, they did not often see dogs disturb wildlife. Respondents got information about the area from social media, wardens and leaflets, and they were most interested in finding out about amenities, where the different areas are and where to walk their dog.

The key findings from these two sections are that while people have a general understanding of the need for conservation at the sites, their awareness of specific instances of disturbance (by themselves or other visitors) is very low. A primary motivation for choosing a site is somewhere to walk with a dog off-lead. Both site and route choice are heavily influenced by convenience, and dog-walking is often a highly habitual activity. Together, these findings suggest that raising awareness could be valuable if supported with other interventions, such as modifications to the physical environment, that help bridge the gap between intention and action.

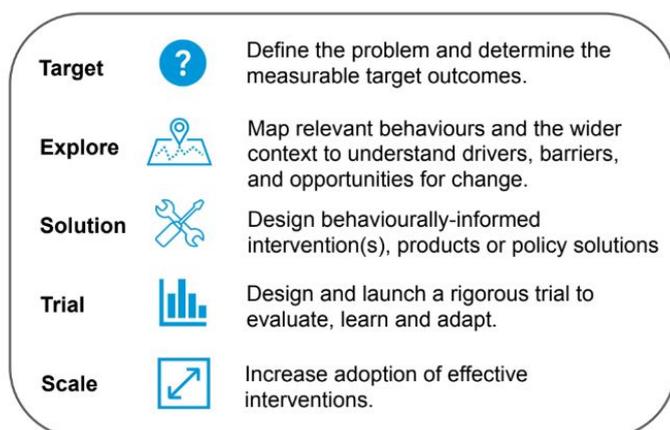
The last part of the report examines previous and ongoing interventions to encourage responsible recreation in areas beyond those in this project.

3. We carried out expert interviews, speaking with five practitioners working on responsible recreation. These experts are working at Natural England, the RSPB, the Brecon Beacons National Park and Cardiff University. We found that many interventions have been attempted in the field but there has been little rigorous evaluation, and while suggested ideas are abundant, there is not a strong evidence base on what works. Promising interventions include modifications to the physical environment, such as by using paths or natural barriers to direct people away from sensitive areas, and messages that harness dog-owners' identity, needs and sense of responsibility, rather than the more typical approach of conservation framing. These findings corroborate those from our literature review (reported in a standalone document).

1. Introduction

1.1 The TESTS methodology

The Behavioural Insights Team (BIT) have been commissioned by Natural England to develop and test behavioural interventions to encourage responsible recreation, in particular by dog-walkers, on two pilot sites: Thames Basin Heaths and Bird Aware Solent. The project follows BIT's 'TESTS' methodology:



This report provides our findings from the Explore phase. Although 'TESTS' is presented above as a linear process, in practice there is feedback between the stages, and we have been carrying out Target and Solution work concurrently with Explore research. The purpose of the Explore research is to help us confirm that our Target is both feasible and impactful, and to explore barriers to and drivers of behaviour-change, in order to inform our Solution (intervention) ideas.

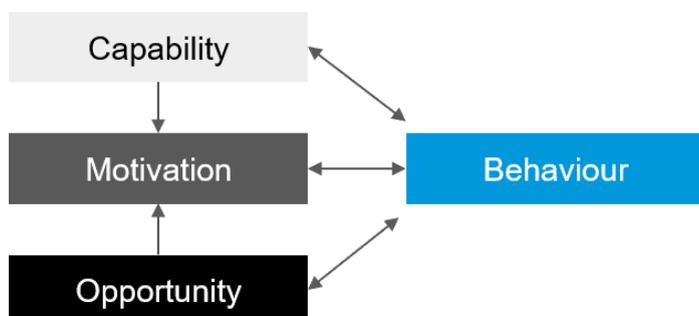
1.2 The COM-B model

The Explore phase combined desk research, interviews in the field and an online survey to gain an understanding of the factors enabling responsible recreation behaviour, as well as the barriers to behaviour change. To investigate these factors in a systematic way, we use the COM-B model.¹ This model defines the three domains of *capability*, *opportunity* and *motivation* to explain the influences on a person's behaviour:

- **Capability** is defined as the individual's psychological and physical capacity to engage in the behaviour in question. It includes having the necessary knowledge and skills. For example, *physical capability* can include strength, skill or mobility. *Psychological capability* can include knowledge and access to information.

¹ Michie S, van Stralen MM & West R (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science* 6:42.

- **Motivation** is defined as all those brain processes that energize and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, and analytical decision-making. For example, *reflective motivation* can include assessments of trade-offs, plans and evaluations. *Automatic motivation* can include desires, impulses, inhibitions and habits.
- **Opportunity** is defined as all the factors that lie outside the individual that make the behaviour possible or prompt it. *Physical opportunity* can be afforded by the local environment, time-availability, accessibility and resources. *Social opportunity* can be afforded by cultural norms, identities and social cues.



The different elements of COM-B affect each other: (i) motivation is affected by capability and opportunity, (ii) capability, opportunity and motivation together determine behaviour, and (iii) behaviour itself affects capability, opportunity and motivation.

1.3 Literature review

In addition to the research presented in this Explore Report, we carried out a rapid review of the literature on responsible recreation, which we report in a standalone document. This involved a targeted search of government agency reports, independent reports and published peer-reviewed literature related to recreation management or mitigation efforts in the UK and international conservation contexts. Together, our findings from the literature review and expert interviews allowed us to identify the key barriers to and drivers of behaviour change, and assess the evidence base for behavioural interventions.

2. Visitor interviews

2.1 Summary

We conducted a series of interviews with dog walkers and other visitors at a sensitive and non-sensitive site in each of the Thames Basin Heaths and Solent areas. Our aim was to identify the barriers and enablers to responsible recreation behaviours across these areas. We use the COM-B model as a framework to understand these barriers and enablers in terms of capability, opportunity and motivation to perform a behaviour.

In short, we find that:

- Visitors often lack the ability to keep dogs under close control
- Visitors generally have low awareness of when they are disturbing birds
- Visitors have some awareness of seasonal conservation efforts and the wardens' presence
- Visitors have high awareness of other visitors' behaviour
- Dog walking is often a highly habitual and social activity
- Both site, and route, choice is influenced by convenience, attractiveness and environmental conditions (including tides, weather and safety). There was no reported consideration of the dog's impact on a site in users' choice of sites or routes - only consideration of the dog's needs (i.e. allowing their dog off-lead was a primary reason for visiting).

Table 1: Summary of the different influencing factors (using the COM-B model), and the barriers and enablers driving recreation behaviours as identified from interviews.

Influencing factor	Barriers	Enablers
Physical capability	<ul style="list-style-type: none"> • Owners lack the ability to keep dogs under control • Some birds are hard to see 	<ul style="list-style-type: none"> • Dogs can be trained, some dogs are easier to keep under control than others
Psychological capability	<ul style="list-style-type: none"> • Many people don't realise when their own dog disturbs birds, or the impact of visitors on wildlife • Some people are not aware of sensitive areas/times of year • Many people don't know where to find more information • Some people don't know about/how to get to other sites 	<ul style="list-style-type: none"> • Many people are aware of sensitive areas or times of year • Signs appear effective at conveying information • Advertising alternative sites appears to be effective

Physical opportunity	<ul style="list-style-type: none"> • Lack of time to go to alternative sites • Some sites have no natural 'zones' or barriers to indicate sensitive areas 	<ul style="list-style-type: none"> • People tend to follow paths or cues from signs when available • Car parks are focal point where many people could be reached • Car park spaces limit visitation • Access to some sites is environment-dependent (e.g. tide, rain, mud) • Some sites have naturally demarcated 'zones' and barriers (e.g. via habitat type or waterways)
Social opportunity	<ul style="list-style-type: none"> • Visitors easily see other visitors with dogs off lead • Lack of social pressure to not use lead • Some visitors direct the need for behaviour change towards others rather than themselves 	<ul style="list-style-type: none"> • Many people have interacted with wardens • Dog-walking is a social activity, and many regulars chat to each other
Reflective motivation	<ul style="list-style-type: none"> • Desire to be on the beach/in the heather rather than in a less 'wild' area • Desire to be away from roads • Visitors do not always pay much attention to signs • Owners more motivated by giving their dog somewhere to run around than by protecting wildlife 	<ul style="list-style-type: none"> • Owners care about their dog's safety • Many people consider themselves to be nature-lovers and think dog-owners have a responsibility to look after natural areas
Automatic motivation	<ul style="list-style-type: none"> • Strongly entrenched routines make behaviour hard to shift • Visitors often do not notice wildlife • People who use a site daily may be wary of interventions that seem intrusive 	<ul style="list-style-type: none"> • Harness moments to create new routines, such as moving house or buying a dog

2.2 Methods

We conducted short (5 minute) interviews at both a sensitive and non-sensitive site in both the Bird Aware Solent and Thames Basin Heaths areas.

Thames Basin Heaths: we interviewed 11 sets of visitors at Horsell Common (Special Protection Area), and 5 at Heather Farm (Suitable Alternative Natural Greenspace).

Bird Aware Solent: we interviewed 8 sets of visitors at Weston Shore (sensitive site) and 2 visitors at Victoria Country Park (non-sensitive).

We thank Lizzie Hibberd (Bird Aware Solent) and Ann Conquest (Thames Basin Heaths) for

arranging our visits.

For the interview guide for each site, please see Appendix 1.

2.3 Results

Physical capability

Individuals' physical capacity to engage in the behaviour in question, e.g. strength, skill or mobility.

Dog control

It was unclear how much dog owners perceived that they were able to control their dogs. To some extent, this seemed to depend on the dog itself: for instance, at Thames Basin Heaths, one woman with three dogs said that in general at the site *"only the pups and the little ones really are on the lead"* (interview 5). Seemingly, this suggests that either the owner can control such dogs better on the lead, or protect them better from other dogs which are out of control when off the lead.

One commercial dog-walker thought that other dog walkers should just be able to control their dogs with whistle and recall, with the implication being that not many other owners were actually able to do this (interview 9).

A number of dog walkers reported how they visited the specific sites because they were far enough from roads to keep their dogs safe. For instance, one man at the Thames Basin Heaths SANG said that there his dog *"can just run around"* with *"no danger of roads"* (interview 16). Another man at the nearby SPA similarly said that site was *"better because it is further from the road"* and that he feels *"more comfortable with the dogs off the lead [at this site]"* (interview 8). Such motivations again imply that these owners do not have full off-lead control over their dogs.

Psychological capability

Individuals' psychological capacity to engage in the behaviour in question, e.g. having the required knowledge and awareness.

Disturbance

Many people at both sites were not aware that dog walkers and other visitors to the site could actually disturb birds, and also did not recall witnessing any disturbance. We did not find anyone at either site who described disturbance in the same manner described by the rangers.

For instance, one man in the Thames Basin Heaths SPA described how he doesn't *"really notice birds whilst in the woods"* and doesn't *"see any disturbances"* (interview 8). In particular, we found dog-walkers who didn't realise that their own dog could be disturbing birds: one woman with a single dog in the Thames Basin Heaths SPA stated: *"my dogs run*

free, I don't see it as a disturbance" (interview 4).

On numerous occasions dog walkers would say that their dogs did not disturb birds, and then subsequently either display a behaviour with disturbance potential (e.g. their dog running off-lead during the interview) or describe a clear example of disturbance (e.g. their dog causing birds to fly away). For example, one man with two dogs on the TBH SANG recounted how he doesn't see dogs disturbing birds, but that his own dog often chases birds, making them fly away, but never catches them (interview 12). Another man at the non-sensitive site in the Solent described how *"birds can fly, so it's not a problem with dogs if the dog's out of control, because birds can just fly away"* but that he *"hadn't seen any evidence of disturbance"* (interview 26). However, at the same site, a mother with a child and single dog said that she doesn't let her dog run through a *"gaggle of birds"* (interview 25).

To the extent that greater awareness is necessary (though perhaps not sufficient) to change behaviour, these findings clearly show that it is not just awareness of the presence of sensitive wildlife (which is typically the focus of awareness-raising efforts), but equally critically, awareness of what constitutes 'disturbance'. We cannot expect dog-walkers to make a conscious effort to protect wildlife if they lack an understanding of how sensitive wildlife is to seemingly benign dog activity.

Sensitivity

We found mixed levels of awareness about the sensitivity of the sites.

Some people were not aware at all about the sites being sensitive for wildlife or their status as specially protected. For instance, one man in the Thames Basin Heaths SPA said that he wasn't aware of any conservation measures at the site (interview 10).

However, at the same site, other visitors were much more aware of its sensitivity. One middle-aged man with two dogs recognised Thames Basin Heaths and was aware of the *"nesting bird stuff"* (interview 2). Similarly other visitors knew about *"the preservation work for the ground nesting birds"* (interview 3) and the *"signs up about ground nesting birds"* (interview 13). One woman said how at another site she deliberately keeps her dogs on the lead to not disturb the ground nesting birds (interview 7).

Some visitors were also aware that the site was more sensitive at certain times of the year. One commercial dog-walker at the Thames Basin Heaths SPA said that she had seen lots of signs up about the ground nesting birds in the summer (interview 9). This same individual said that although she lets her dog off the lead in the heather at this time of year (autumn) she keeps them off the heather in the summer. Similarly, one middle-aged woman with three dogs said that *"I've seen wardens up here in the spring"* (interview 5).

In the Solent, numerous visitors were similarly aware of seasonal bird sensitivity. A man in one couple stated how *"they will keep dogs on the lead during nesting season"* (interview 26). Similarly, one woman described how *"When birds come to rest, you have to not disturb them"*, although she didn't know what time of year that was (interview 22). At the same site, another woman who visits the site daily declared that she knew *"something about a bird that only lands in the summer"*, but did not know not any more detail than that (interview 18).

Information

We found that many people perceive that more information would help people behave more responsibly. However, it was unclear whether they meant that information would help them personally, or other visitors.

For instance, one woman with two dogs at the Thames Basin Heaths SPA said that many people don't take their dogs to an alternative (less sensitive site) because *"they don't know how to get through to there"* (interview 7).

One man at the Thames Basin Heaths SPA suggested that to promote responsible behaviour *"signs would do it, but I don't see that many"* (interview 10) and another at the nearby SANG said that he thinks *"people will become more aware once they are told"* (interview 15). Another visitor at the same site similarly said: *"when people see signs [such as for birds or sheep] they generally follow the rules"* (interview 12).

At the sensitive Solent site, one woman pointed out the presence of an egret on the shore, but said that *"unless you read the signs you don't know"* (interview 18).

Another woman at the non-sensitive Solent site suggested it that would be helpful if Bird Aware Solent directed people to particular beaches. Indeed, she said this was why she was at that particular site (interview 24).

Physical opportunity

The physical and environmental factors that lie outside the individual that make the behaviour possible or prompt it, e.g. time-availability, accessibility and resources.

Proximity

Physical location emerged as an important driver of why people visited a site. One man said that he visits the Thames Basin Heaths SPA daily because it is *"nearest and most convenient"* (interview 10). When explaining how she chose between sites, one woman said that the Thames Basin Heaths SANG is easier to get to than the SPA (interview 13).

Environment/path

The physical characteristics of each site also influence where and when people visit. One woman at the Thames Basin Heaths SPA said that she *"doesn't walk where there is lots of mud"* (interview 7). Similarly, at the sensitive Solent site, a male dog-walker said that he would visit the site depending on tide, and he wants to avoid mud so doesn't go at high tide (interview 23). A man at the Thames Basin Heaths SANG said that he visited that site (rather than others) when it rains (interview 12). One commercial dog-walker identified that the physical characteristics of one site (a bridge separating the car-park and adjacent field from the rest of the site) made it a suitable location to place bins and signs, but that this couldn't be done at the nearby SPA (interview 14). At the Solent, one young male dog-walker stated that he would *"only go on the beach when it's high tide"* (interview 19). At the same site,

another couple walking their dog (off-lead) said that they “*mostly stay on paths*” (interview 21) and a woman in a group of four dog-walkers agreed that the lack of lights at the site makes it difficult to visit the site in winter (interview 18).

Amenities

The amenities provided at each site also affected behaviour at the site, including whether people choose to visit the site in the first place. For instance, at the Thames Basin Heaths SPA numerous people reported that due to the car-parks being busier, they were often not able to visit the site at weekends or sometimes at peak times during the morning (interview 6). A commercial dog-walker described how “*parking can be a nightmare, particularly in the summer and weekend*” (interview 14).

Signs

People generally considered signs to be an effective way to influence dog walkers' behaviour. One couple at the sensitive site in the Solent who walk their dogs at numerous sites considered that “*most dog walkers do pay attention to signs*”, but that it's the owner's responsibility [to keep dogs under control] (interview 20).

Social opportunity

The social factors that lie outside the individual that make the behaviour possible or prompt it, e.g. cultural norms, identities and social cues.

Other visitors

The people we interviewed clearly notice the behaviour of other visitors and their dogs. One woman at the Thames Basin Heaths SPA said that “*lots of dogs like the heather and lots of people let their dogs run in the heather*” (interview 3). Another woman at the same site said that “*most other dogs are off lead*” (interview 5). One man at the sensitive Solent site said that he “*has seen other dogs chase birds*” and that “*people think it's funny*” (interview 23).

Wardens

It is also clear that at all sites people have noticed or interacted with wardens. In the sensitive Solent site one daily dog-walker said that “*people do stop and talk to them [Bird Aware] but once they've done so once, it's the same*” (interview 22). At the same site, one couple said that they see Bird Aware Solent at that site and “*all down the shore*” (interview 24). Similarly, one woman at the Thames Basin Heaths SPA was “*happy the wardens stopped her and chatted and told her about the ground nesting birds*” (interview 7).

Community

It was also clear that in both Thames Basin Heaths and the Solent dog-walking is a social activity, particularly among local regulars. One woman at the Thames Basin Heaths SPA described how she “*likes to also meet people here and be social*” (interview 6). She also said

that different groups of people (more families and young people) arrive at the weekend - *“this place is a different place at the weekend”* - and that *“everyone thinks the common is theirs”*. A commercial dog-walker at the nearby SANG similarly described the presence of *“weekend walkers”* (interview 14). At both sites we also interacted with and saw groups of dog-walkers who said that they often saw each other daily.

Reflective motivation

Goals and conscious, analytical decision-making which influences behaviour, e.g. assessments of trade-offs and planning.

Attraction

Visitors at all sites considered the attraction of the site when making their decisions about where to visit (and where to walk at the site). For instance, one young woman at the Thames Basin Heaths SPA liked the site specifically because she likes bigger places where she can let her dog go and run around but still see it (interview 1). One man reported enjoying nature (interview 2) and one lady justified visiting the SPA frequently by saying *“I like the trees”* (interview 4). Numerous visitors also simply liked variation in where they walked. For example, one couple from the sensitive Solent site said that they *“go to lots of places with their dog”* because they *“like variety”* (interview 20).

Safety

As already mentioned in the ‘physical capability’ section above, numerous visitors reported that ensuring the safety of their dogs, from roads (interview 8), was a key reason determining where they chose to visit. Ensuring the safety of their dogs from injury once at a given site, such as from adders or other dogs (interview 4) or sharp shells in the intertidal (interview 23) were also given as reason for keeping dogs on the lead or the path. A man walking two dogs at the Thames Basin Heaths SPA site said that he keeps one dog, the *“small anxious one”*, on the lead at the SPA but not the SANG, but lets the other one off the lead at both (interview 2).

Values

Some individuals also described a desire to protect the natural environment, which they reported as influencing their own behaviour. For instance, one woman at the Thames Basin Heaths SANG described how she was a member of the local preservation society and supported their work (interview 15). A man at the sensitive Solent site said that *“people like to see and hear birds but don’t know about them”* (interview 23) and a number of people at the same site reported how they were unhappy that bait digging was damaging the local environment (interviews 18 and 24).

Automatic motivation

Habitual processes and emotional responses which influence behaviour, e.g. impulses, inhibitions and habits.

Habit

The majority of visitors reported how they visited the site daily or as part of a routine. For instance, one man at the Thames Basin Heaths SPA said that he “sticks to [his] own paths and routes” so that he “doesn’t bump into too many people” (interview 8). Another woman at the same site said that she visited the site every day and then “walks in the park in the afternoon close to home” (interview 7). However, whilst at the SPA she “likes to take a different route each time” - which suggests that although site choice may be habitual, walking routes may be more subject to change.

Attention

Some respondents reported that they simply don’t notice or think about birds when going about their daily walks. At the Thames Basin Heaths SPA one woman said that she doesn’t “really notice birds”... “I’m not a fan of birds really, so I don’t pay them much attention” (interview 1). Another man at the same site said how he “doesn’t really notice birds” whilst he is out walking his dog in the woods (interview 8).

2.4 Conclusions

From these interviews we can conclude that at both sites there are a range of barriers and enablers to encouraging responsible recreation. These include factors related to individuals’ awareness about sensitive birds and birds’ sensitivity to seemingly ‘normal’ dog behaviour, but also the physical characteristics of each site and visitors’ non-conservation-related motivations. In particular, we find that there are low levels of awareness about what constitutes bird disturbance or personal acknowledgement of individuals’ own possible impacts. We also find that dog-walking at each site is often a highly habitual and social activity, and the behaviours of other visitors are highly visible.

At both sites we find that visitors are generally quite receptive to messages about bird conservation, and are supportive of bird-related information signs. However, one important caveat to note is that people often do not do what they say they will do (this is known as the intention-action gap). Furthermore, from interviewing visitors and watching dog behaviour at each site, it is clear that owners rarely have sufficient off-lead control over their dogs to prevent bird disturbances, even though visitors tend to think their own dogs are under sufficient control. Given visitors’ strong motivation to visit these sites specifically for off-lead access, we suggest it may prove difficult to encourage visitors to either change site or use the lead for conservation purposes alone. Encouraging dog-walkers to choose certain routes and keep their dog within close proximity and ‘under control’ is likely to be a more feasible objective, as reflected in the introduction to this report.

Based on this section of our Explore research, we suggest the following interventions are worth exploring further:

- Signage highlighting specific times and locations to use the lead, with associated communications focusing on local pride/identity
- Changes to the physical characteristics of paths to nudge visitors to use less sensitive routes at sites
- Communications encouraging users to change route due to other concerns, e.g.

safety

- Communications encouraging new users to try other convenient and attractive sites
- Communications seeking to raise awareness of what a 'disturbance' is, rather than solely highlighting the presence of wildlife.

These ideas are added to the list of promising interventions that emerged from the expert interviews (please see section 4 below in this report), as well as ideas under development in the Solution phase of this project.

3. Visitor survey

3.1 Summary

The goal of this survey was to gain insight into the barriers to behaviour change, as well as the factors enabling responsible recreation that we would be able to harness in 1) the online trial, including the motivations dog-owners have for choosing natural areas to visit and comprehension of visitors' impact on wildlife; and 2) the pilot field trials, such as the channels people use to gain information and the amenities they want at the sites.

We surveyed 64 people in dog-focused social media groups in the Thames Basin Heaths area. The main findings are:

- People's primary motivation for choosing somewhere to walk their dog was having somewhere to let the dog off-lead; convenience and cost are also important;
- People identified as nature lovers and think dog-walkers have a responsibility to look after natural areas they use, and although they agreed that visitors can have a negative impact, they did not often see dogs disturb wildlife;
- People got information about the area from social media, wardens and leaflets, and they were most interested in finding out about amenities, where the different areas are and where to walk their dog.

3.2 Methods

We created a Google Forms survey <<https://tinyurl.com/heathland-hounds>> (questions listed in the Appendix below) and posted it on the Heathland Hounds Facebook page, sharing the post with the following groups:² Surrey Dog Owners, Surrey Dog Owners Network, Dog Owners of Yateley and surrounding areas, Surrey Heath K9 Community, Bracknell Dog Owners/Walkers, Dog walking meet up Berkshire and beyond UK. Thames Basin Heaths also Tweeted the survey link, tagging Surrey Heath Borough Council; Surrey Wildlife Trust; Berks, Bucks and Oxon Wildlife Trust; the Ministry of Defence; Hants and Isle of Wight Wildlife Trust; Hart Countryside Services; and Yateley Common rangers.

We targeted these groups because we wanted to get responses from dog-owners specifically. However, we note that this is not a representative sample of dog-owners, as we would expect those who belong to the social media groups and were willing to complete the survey to be more engaged and aware of wildlife issues than average.

The survey went live on 2 January 2020 and closed on 14 January 2020. 64 people responded, although we added some questions on 3 January, so only 36 people saw these. We note the sample size is therefore relatively modest. Small differences in responses should therefore not be treated as statistically meaningful. However, interesting and valuable insights emerge when differences are larger.

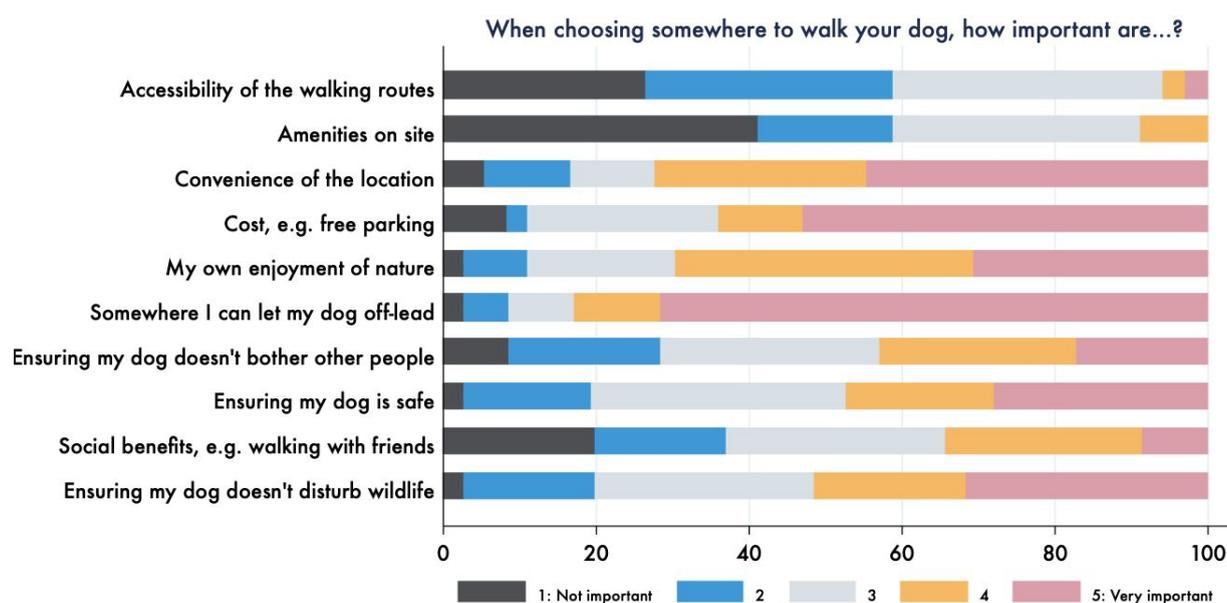
² We thank Ann Conquest and Nicola Buckland from the Thames Basin Heaths team for their assistance in posting the survey.

3.3 Results

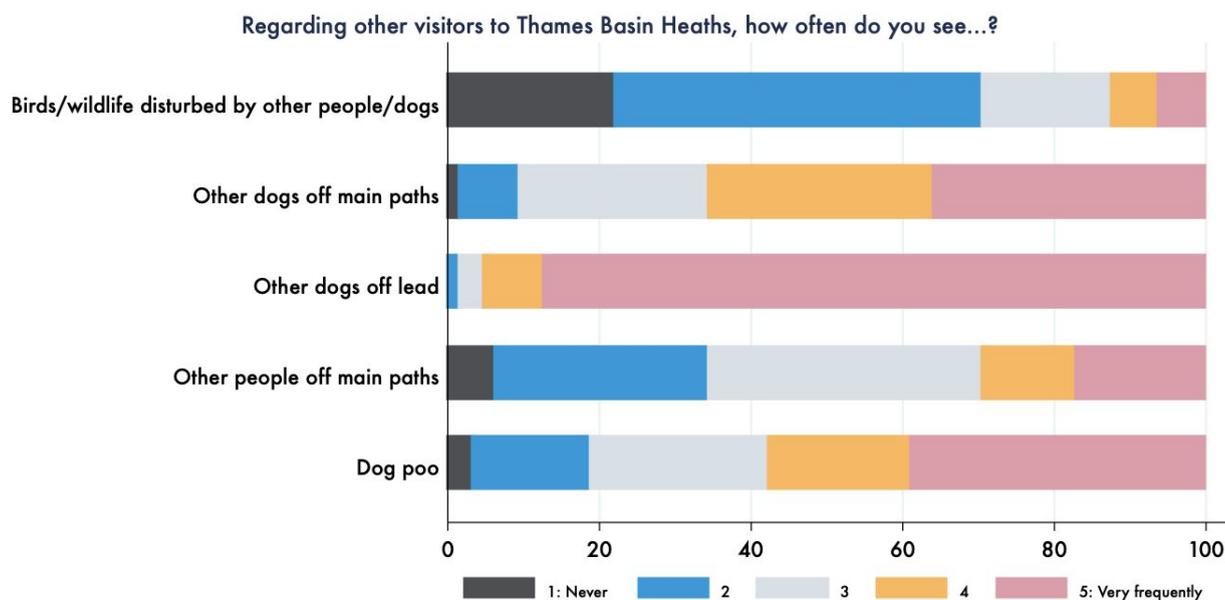
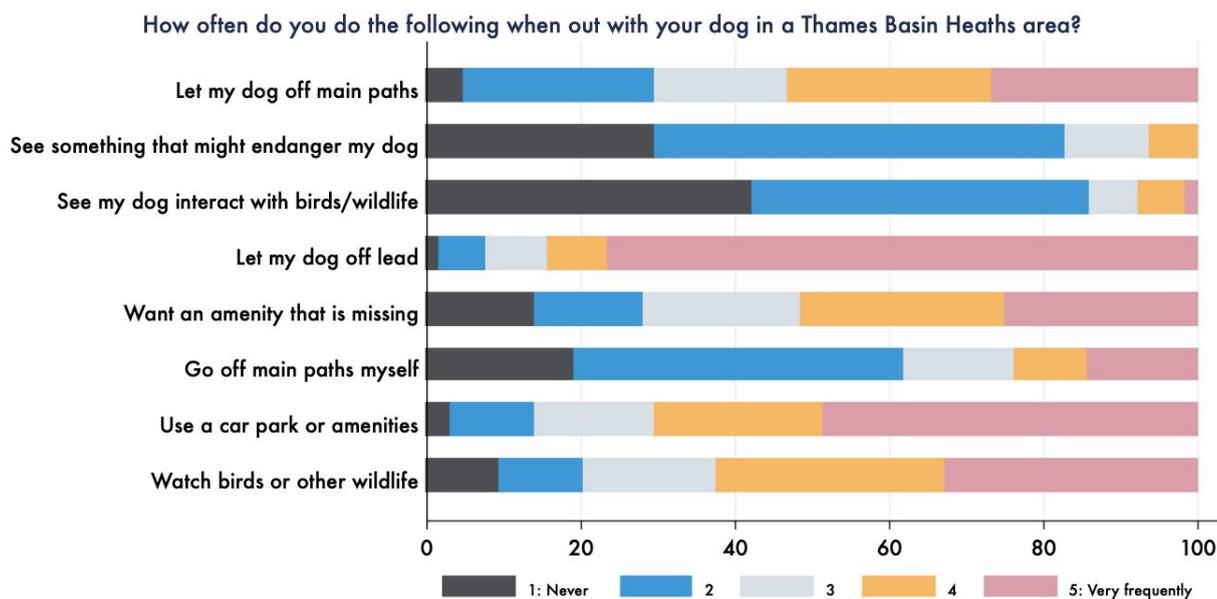
Below we present the results verbally, illustrating the most important findings with graphs. Tables with the full numerical results from all questions are given in Appendix 2.

Using the Thames Basin Heaths sites

“Having somewhere I feel comfortable letting my dog run off lead” was the most important factor people consider when choosing somewhere to walk their dog (mean rating 4.42 / 5). The other top two reasons were cost, such as free parking (mean 3.97), and convenience (mean 3.94).

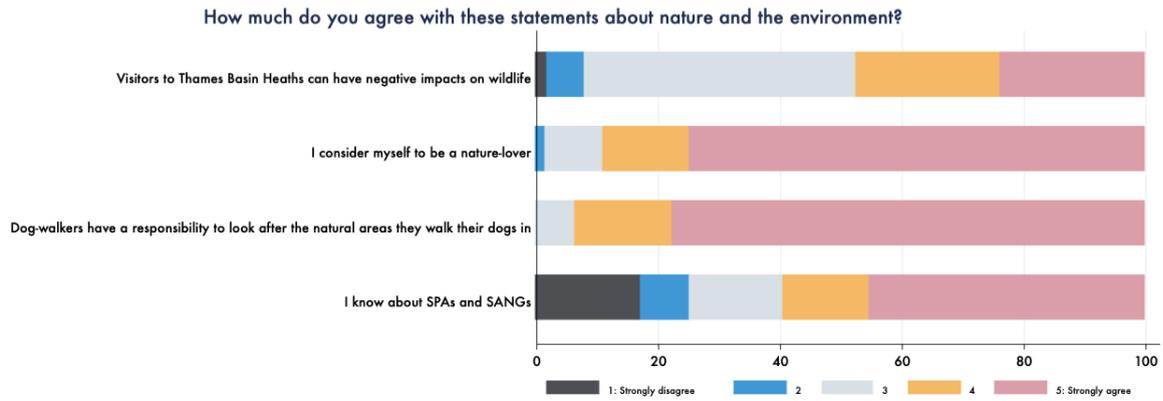


Although people said they watched birds and other wildlife (mean rating 3.66 / 5), they did not frequently see their own or other people's dogs disturb wildlife - although they saw other people's dogs disturb wildlife more frequently (mean 2.27) than they saw their own do so (mean 1.81). They also did not frequently see anything that would endanger their dog (mean 1.94). The amenities that people use most - and would like to see more of - are car parks and dog poo bins.



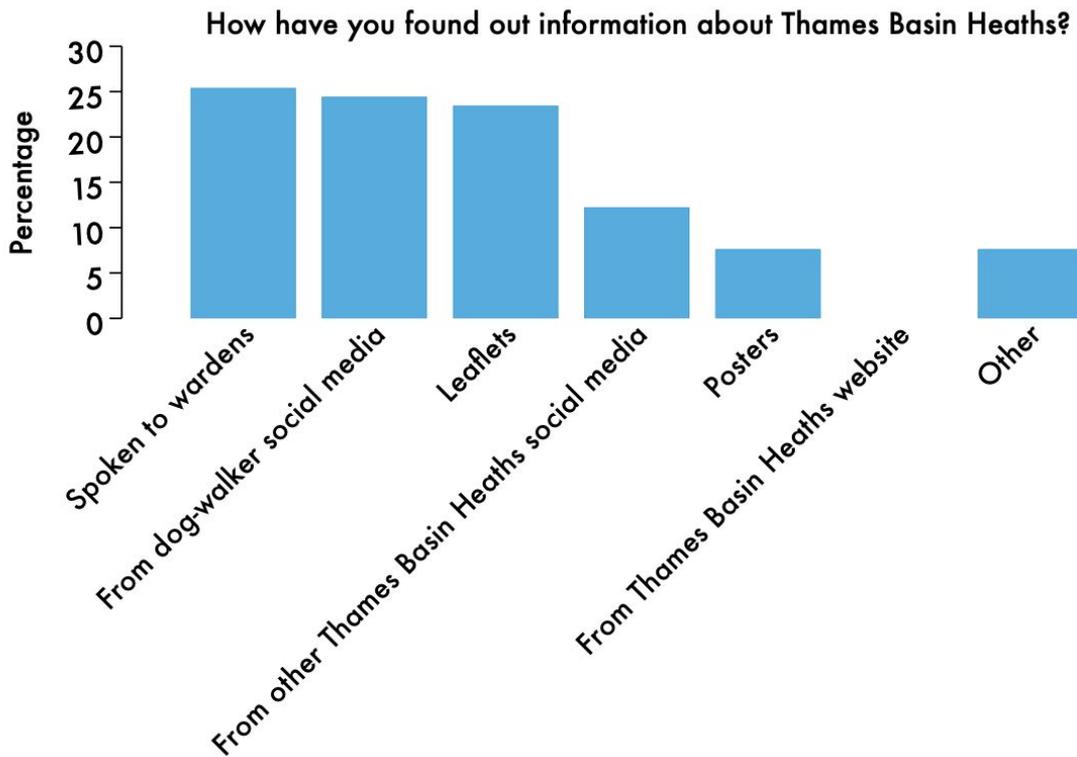
Visitors and the environment

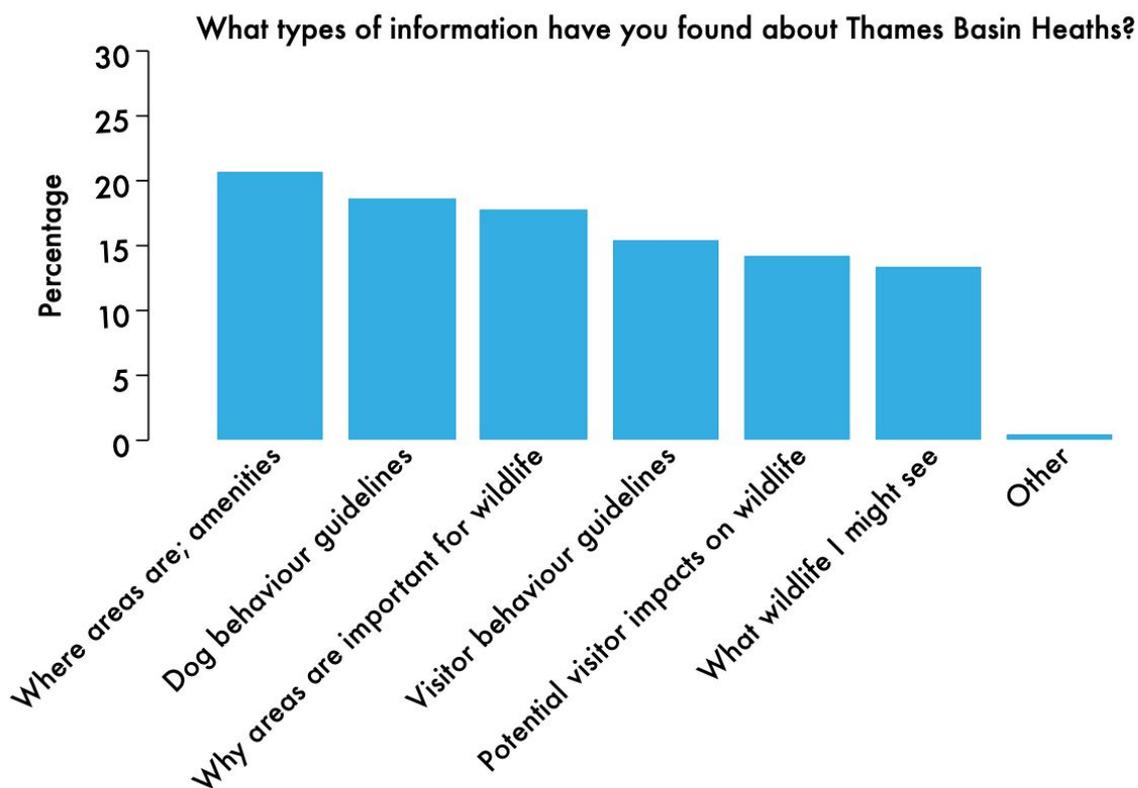
In general respondents strongly agreed that they considered themselves to be a nature lover (mean rating 4.63 / 5), and that dog-walkers have a responsibility to look after the natural areas they use (mean 4.71). However, there was less agreement that visitors can negatively impact wildlife (mean 3.62).



Finding out information about the area and local dog-walkers' groups

The most common ways respondents gained information about Thames Basin Heaths are speaking to wardens, dog-walker social media groups, and leaflets. Respondents primarily found out about where the areas are and what amenities they have, although many also found out about guidelines for dog behaviour and about wildlife in the area. The most common barrier to finding out more was not knowing where to look, although few people listed barriers.





The most common way people found out about local dog-walkers' groups was by finding a Facebook or Twitter page, followed by speaking to wardens. The most important reason why people joined was to get information about where to walk their dog. Of respondents who said they were not members, the most common reason for not joining was that they were not interested in the information.

We emphasise again that the respondents in this survey are likely to be more engaged than the general population of visitors, as they were motivated to join a social media group as well as answer the survey.

3.4 Implications

The results of this survey supplement those from the visitor interviews by giving us insight into the enablers of and barriers to responsible recreation at Thames Basin Heaths.

Key barriers to behaviour change are that visitors want somewhere to let their dog off-lead, so encouraging visitors to use leads during sensitive times of year may not be effective. Given that convenience and cost are important considerations in visitors' site choice, it may be difficult to encourage visitors to switch to less sensitive sites unless they are as easy to get to and as appealing as the more sensitive sites. In addition, visitors did not seem aware of the impact they or others were having, as although they knew that visitors *can* have negative impacts, they did not frequently notice birds or other wildlife being disturbed by dogs.

Despite the latter finding, a promising enabler of responsible recreation is that visitors did consider themselves to be nature lovers, and thought dog-owners have a responsibility to protect natural areas they walk their dogs in. This highlights an interesting contradiction between visitors' pro-nature values, and their own actions and awareness regarding the specific issues of wildlife disturbance. We also note that 'loving nature' does not necessarily constitute 'protecting it', since it may also simply reflect one's enjoyment of nature, in a fashion more related to transaction or consumption, i.e. 'I love being in and enjoying nature for my own sake'. Many actions of 'nature lovers' can be damaging, for instance those who hike off-path or wild-camp with fires in order to get closer to untouched nature. Nonetheless, this does present an opportunity to attach messaging to an identity of being a nature lover.

The survey results also reveal two important points about how people access information and what types of information they gain, which we will use to inform the messages we will test in the online trial as well as the field trial of delivery channels. Firstly, we see the potential of social media to reach the target audience, though also of more traditional routes such as leaflets and face-to-face with wardens. We note that while the latter is what currently happens, it is unlikely that social media has been exploited as much as it could be, whilst wardens are already stretched and can only speak to a limited number of visitors. Secondly, the results highlight the point that providing information on good dog-walking sites is not just an issue of responsible recreation, but is, regardless of wildlife issues, useful and welcome information for finding enjoyable walks per se.

For a field trial of a physical intervention, we note that having accessible walking routes (e.g. mud-free paths) did not seem to be a particularly important motivator of site choice, although the findings from the rest of the Explore Phase suggest that providing paths through non-sensitive areas is likely to be effective. This may seem to be contradictory, but in fact people may unconsciously use whatever paths are provided at a site, without accessibility being a conscious factor in the decision for which site to go to. We therefore think clearly signposted routes through non-sensitive areas remains a promising idea to trial.

4. Expert interviews

4.1 Overview

We spoke with five experts in responsible recreation. Our conversations were semi-structured, based in the first instance on the following points, but ultimately reflecting what the interviewee had most experience with.

- *What aspect(s) of responsible recreation have you worked on? (e.g. do you focus on impacts on wildlife, or on human behaviour?)*
- *Which behaviours do you think have the biggest impact on wildlife? What kind of data can we collect to measure the prevalence of these behaviours?*
- *What do you think are the main barriers to behaviour change?*
- *Have you worked on any behavioural interventions in this area? If so, what did they involve, were they successful, and why or why not? If not, have you come across any interventions in your work that you think we could learn from?*
- *How do you/managers make intervention decisions?*
- *What is feasible? Who needs to agree or sign off on decisions for an intervention to be implemented?*
- *What tools do you have at your disposal to promote responsible recreation?*
- *If you could do a test to find out one thing, what would it be?*

Below we summarise the key themes that emerged from these interviews. We thank the experts who agreed to talk to us:

- James Lawrence (Visitor Management, Brecon Beacons National Park)
- Conor John (PhD student, Cardiff University)
- Pippa Langford (Recreation & Access, Natural England)
- Victoria Carr (Conservation Science, RSPB)
- Vivienne Booth (Ecology, RSPB)

4.2 Target: what are the behavioural issues?

There was broad agreement that there are two main behavioural problems: having dogs off-lead or not under control, and bringing dogs into sensitive areas. The consequences of these behaviours are disturbance of wildlife (particularly birds), as well as of livestock.

Wildlife and livestock may be disturbed by dogs even when the dogs are well-behaved, so it may be more impactful to change where people walk their dogs (i.e. avoiding sensitive areas entirely) rather than encouraging people to use leads or have better control. However, this may also be less feasible in some areas, as staff at many sites (including Thames Basin Heaths and at Bird Aware Solent in this project) wish to continue being welcoming to dog-owners and not restrict their access.

Dog waste was also highlighted as a major issue (and a less divisive one than where or how to walk one's dog), so although it is not a target for the current project, it has been the target of several interventions which are still useful to consider.

4.3 Explore: what are the barriers to behaviour change?

As in the accompanying literature review and visitor interviews below, here we use the COM-B model as a framework to help us understand the barriers for dog-walkers to adopt responsible behaviours. The following are the barriers that the experts highlighted.

Psychological capability

Many visitors are simply unaware of what the rules are about dog access and use of leads at a given site. These rules depend on what the legal access rights of the land are, which in some sites may have changed recently, and may also vary at a small spatial scale (for example, in the Brecon Beacons, although there are not visible land boundaries, visitors may cross into different sites with different access policies in the space of a single walk). This is compounded by a lack of consistent messaging across sites, as well as more visitors coming into natural areas for the first time and who are less familiar with the Country Code.

Visitors may also simply not be aware of the impact their recreation has on the areas they visit. For those who have some awareness, they may be more likely to understand about the impact on livestock than on wildlife, since the latter is more difficult to see.

Physical opportunity

Dog-walkers generally want to let their dogs off lead, and this is often a dominant motivation for visiting a given site. This activity needs to be catered for, and it is unrealistic to simply tell people not to do it, especially within areas of apparent wilderness or open nature.

Social opportunity

Depictions of dog-walkers on TV and social media tend to show dogs off-lead, encouraging social norms of letting one's dog run free. In fact, one social media influencer who now posts about responsible recreation in the Brecon Beacons had originally posted photos of her dogs apparently off lead - because she had photoshopped the leads *out*.

Reflective motivation

Some visitors understand in principle about the impact their recreation can have on birds, and may be willing to put their dog on a lead if they see a bird (or livestock) - but are not so willing when the potential impact is difficult to see, as is the case for ground-nesting birds. People may also often understand that visitors in general - *other* visitors - have an impact, but think that they themselves do not; likewise, dog-walkers often agree that others' dogs are out of control, but are confident that their own are not. This latter finding echoes wider research on self-enhancement bias: our tendency to view our own actions and abilities more favourably than those of others. It may also reflect an attribution error: we tend to view our own failings or misdemeanors as down to unlucky circumstance or a rare exception, but the failings of others as demonstrative of their flawed character or judgement.

4.4 Solution: what interventions have been tried?

The current scenario

The two most common approaches to intervention are messages with:

1. Negative framing. This includes telling people what *not* to do, or warning that dogs could be shot by farmers (which is legal under certain limited circumstances). Understandably this creates antagonism between dog-owners and other stakeholders.³
2. Conservation framing. Managers of natural areas tend to take the perspective of wildlife, rather than considering the visitors and their needs (Figure 1). This means that the visitors' needs - such as somewhere to walk a dog off-lead - are not being met, and site managers feel frustrated when visitors do not do what managers think they have told them to do.⁴



Figure 1. Examples of wildlife- and livestock-oriented signs.

However, many sites have also tried more innovative approaches, and below we outline those that the experts had worked on themselves or were otherwise familiar with. We use the framework for categorising interventions that we use in our accompanying literature review.⁵

Physical interventions

Path and habitat

While putting up fences can be an effective way to introduce 'friction costs', i.e. reducing access without actually restricting it (for example, RSPB Broadwater Warren reserve fenced off a lake area but included gates), fences can be seen as oppressive. Using vegetation instead, such as gorse, to create a physical barrier is a promising alternative. Broadwater Warren staff have also done this, planting shrubs alongside paths.

³ Although when dog-owners in the Brecon Beacons were asked whether they preferred new signs about protecting animals in the national park, some said they preferred the old ones about dogs being shot because they were more 'to the point'. Conor John is still analysing this.

⁴ There is also an implicit assumption that the target audience cares about conservation, and that this concern is a dominant driver of their behaviour. Although the former may be the case, wider evidence shows that the latter is often not: reviewed by Park T, Green K, Reiner C & Williamson K (2019). Behavior Change for Nature: A Behavioral Science Toolkit for Practitioners. Arlington, VA: Rare.

⁵ Baynham-Herd Z, Redpath S, Bunnefeld N, Molony T & Keane A (2018). Conservation conflicts: behavioural threats, frames, and intervention recommendations. *Biological Conservation* 222:180-188; Heberlein TA (2012). Navigating environmental attitudes. *Conservation Biology* 26(4):583-585.

Amenities and maintenance

Providing compostable dog waste bags and a biodigester reduced instances of dog fouling at a grazing site in Wales (measured by mapping dog waste on the site). Sheep farmers had previously been reluctant to use the site because of dog waste, and subsequently started grazing their animals there again.

Cognitive interventions

Education

The Brecon Beacons National Park website now has its own section for dogs, which will include a map of best routes to minimise impact. The goal is to provide an easy way for people to know where in the park they can walk dogs.

Signage

The National Trust and RSPB have used traffic-light paw-print signs (green: off-lead allowed, amber: on-lead only; red: restricted/no dog access; Figure 2). These have not been robustly evaluated but there is anecdotal evidence that they have led to more dogs on leads.

RSPB reserves on the Norfolk coast tried a tiered system of signs to indicate how dog-friendly an area is, ranging from signs with happy dogs to 'danger' signs (e.g. risk from approaching an electric fence). The intention was to be more visitor-focused (rather than wildlife-focused), but the impact of these signs have not been tested. The RSPB has a variety of signs on their reserves that use different approaches, including hazards to people and dogs, sharing habitat between wildlife and dogs, and suggesting alternative sites.

Promising approaches with signs that have been tried (again, not robustly tested) include:

- Telling people how far it is to the nearest dog waste bin;
- Using the first names of the farmers who owned the sheep in the site;
- Messages using humour;
- Messages that change: one site did this in a negatively-framed approach, updating the sign to count attacks on sheep nearby.



Figure 2. Example of traffic light signs.

Enforcement

Regulation

The extent to which behaviour can be regulated depends on the access rights at a given site (Figure 3). RSPB Broadwater Warren reserve does not have a public right of way, and has a dogs-on-leads policy between February and August when woodlarks are breeding. They believe this is effective as people stopped visiting the reserve during this time, but they do not have data on where visitors went instead (although do not have reason to think visitors would be going to a site that is *more* sensitive).



Figure 3. Example of regulations at an RSPB site.

Patrols

Burnham Beeches (a Site of Special Scientific Interest owned by the Corporation of London) combines regulation with wardens on the ground. Dogs used to be allowed off-lead throughout the site, but following a consultation, half the site is now on-lead only. The Corporation of London has sufficient resources to have a heavy presence of wardens who issue fines on the spot, and collect data on infringements; they found that compliance with the regulations is high. The intention was to reduce wildlife disturbance, but they believe the intervention has also reduced dog fouling and encouraged more visitors from minority ethnic backgrounds, although they have not monitored this rigorously.

Engagement

Social marketing

Posters in the Brecon Beacons National Park were due to be renewed, so staff have been creating new messages about 'caring for all the animals in the national park [implicit: including your dog]', rather than just protecting birds (Figure 4). Their rationale is that people relate to other animals being vulnerable and are motivated to look after them.



Figure 4. New sign being developed in the Brecon Beacons National Park.

Many National Parks now sell 'dickybags' (neoprene zip-up bags for dog waste) with logos. The National Parks together developed the slogan 'All dog owners that care pick up everywhere', which has been or will be displayed on the bags. Visit Wales is also planning to use the same slogan in its national dog waste pick-up campaign.

The most effective social marketing campaigns tend to be via social media and influencers, rather than conservation organisations. The Brecon Beacons National Park have been discussing with Keep Wales Tidy about whether they can get someone from the Welsh rugby team as a messenger (e.g. harnessing motivation to reduce dog fouling on sports areas).

Stakeholder engagement

The RSPB holds 'dog's breakfast' events on-site to show that this audience is valued and help them connect with the area. RSPB Broadwater Warren reserve has 'ambassadors' on the ground to similarly engage with dog-owners in a positive way.

4.5 Challenges for intervention

What land managers can do to encourage responsible recreation varies greatly between sites, depending on the landowners and rights of way. Open access rights to many natural areas can restrict potential intervention. For example, on common land, managers would not be able to get consent to keep dogs off or even impede access by putting up fences. Planting gorse bushes would also count as impeding access, although there may be loopholes with requesting to 'manage' vegetation. Finding and bringing in the right partners can be critical.

Different organisations may also have inconsistent approaches to behavioural issues, because the impact may differ in different sites. This can lead to confusion from visitors and unintended negative consequences. For example, the Forestry Commission successfully promoted the 'stick and flick' method to deal with dog waste on its land; however, visitors have learned this behaviour without realising that it is detrimental in many ecosystems.

Organisations may also have limited resources to spend on these issues. For example, there is a Dog's Code (similar to the Country Code) created collaboratively by Natural England, Natural Resources Wales and the National Parks Authorities, but due to resources, it is not extensively available. In addition, very few of the interventions have been robustly evaluated.

This may be due to resourcing, as well as a disconnect between researchers and practitioners.

Finally, there may be resistance from dog-owners, who are passionate about these issues. For example, there was a strong email response from people who were given leaflets about neosporosis (a parasite carried by dogs that is dangerous to cattle), as they may have perceived they were being told they were doing something wrong. Getting dog-owners involved, e.g. co-creating interventions, is key, but this can be difficult to achieve. The RSPB has struggled to recruit dog ambassadors, because they get abuse from other dog owners.

There are many reasons to avoid a strategy which irritates or affronts dog-walkers, but it is worth noting that behavioural science also speaks to this point. Messages of blame or guilt (which are quite common in conservation campaigns) risk causing the target audience to 'double down' and rationalise their actions, or to retreat and willfully ignore or avoid the message. These reactive responses are psychological mechanisms through which we can alleviate or avoid feelings of guilt, and often they are the psychologically *easier* response, since the *intended* response, changing our behaviour, may require us to acknowledge some wrongdoing or to inconvenience ourselves. Messages that are framed more positively and avoid antagonism or blame can therefore be more effective.

4.6 Ways forward

The following are approaches that our expert interviewees would like to see more of going forward:

1. Providing paths in sensitive areas seems to be one of the best management tools, as people tend to follow the route of least resistance and don't like to get their outdoor gear muddy;
2. A joint approach with communications in different areas, so that there is a more consistent message to visitors about how to behave responsibly;
3. Creative use of social media, including Facebook or Instagram ads targeting dog walkers;
4. In messages, harnessing the social identity of dog-walkers; in addition, one of the most important motivations for dog owners is to keep their dog happy, so this could be harnessed as well.

We broadly agree with these priorities, noting that behavioural science suggests why they might be particularly effective:

1. Physical interventions are among those with the strongest evidence of impact, and align with behavioural scientists' broader understanding of automatic decision-making which is heavily influenced by physical cues;
2. Consistency of messaging is important to achieve repeat exposure, which drives retention, and a recognised 'brand' or set of phrases may be helpful in obtaining this;
3. Social media is a powerful tool which, while not necessarily sufficient to drive action, does at least offer an opportunity to greatly increase exposure to messages; and
4. It is important to harness the most powerful motivators rather than necessarily those which speak most closely to the plight of wildlife: in this case recognising other

motivations (such as the dog's wellbeing), and attaching concern for nature to one's *identity* (rather than just something you're aware of) are both promising approaches.

This project provides an opportunity to test some of these approaches and address several of the gaps noted by the experts, in particular:

- Online message trial: it would be particularly valuable to test dog- or visitor-oriented messages against the standard approach of conservation-oriented messages;
- Message delivery: promising channels include making use of novel or branded items used by dog-owners (such as the 'dicky bags'), or harnessing social media (and using the right messenger to appeal to dog owners' identity);
- Field intervention: approaches worth considering are easy-to-follow signs (such as paw-prints) that simply indicate where to go at decision points (rather than raise visitors' awareness), and modifications to paths;
- Overall, a contribution to the evidence base for responsible recreation would be of value, since the promising approaches discussed by the experts have not been rigorously tested.

5. Final remarks

The results of our Explore research suggest that a combined approach of (i) awareness-raising alongside (ii) messages framed to target dog-walkers' needs, identity and sense of responsibility, supplemented by (iii) a physical intervention to influence behaviour directly, may be effective.

We note that awareness-raising alone is generally not effective, but there are two reasons why we think it would be valuable as part of a broader intervention in this case. Firstly, we found that many people simply may not know when disturbance happens, so they would not be able to avoid it even if they were motivated to do so. Secondly, the finding that many people say they care about nature and wildlife - and know that disturbance by visitors can happen in general - suggests there is some baseline level of motivation that could be harnessed if awareness were higher, as interventions are generally more effective when people are already willing to change their behaviour.

Nonetheless, we would suggest raising background awareness is just the first step. Influencing visitors' behaviour directly, on-site (e.g. through signage, paths or other physical interventions), will help convert that latent understanding into action, in the moment. A good example of this combined approach is England's plastic bag charge.⁶ Environmental awareness alone would not typically be a strong driver for reduced plastic bag use, and a 5p charge is economically quite weak, but combined, they led to an 83% reduction in the number of bags used. Critically, the 5p charge, which must be proactively agreed to, acts a good reminder to not use a bag, on the basis that shoppers already understand why they should not use one. Thus, background understanding, and a nudge at the point of purchase, can effectively reinforce each other. Furthermore, a secondary benefit is that a better understanding of the issue is likely to boost public acceptability of interventions.

We would expect these principles to apply directly to the context of responsible recreation. In the next steps of the project, we will use our Explore findings to refine the Solution ideas we have been developing for the message-based and physical interventions, and design trials to test them rigorously online and in the field respectively, thereby contributing to the nascent evidence base of what works to promote responsible recreation behaviour.

⁶ Poortinga W, Sautkina E, Thomas GO & Wolstenholme E (2016). The English plastic bag charge: changes in attitudes and behaviour. Cardiff: Welsh School of Architecture/School of Psychology, Cardiff University.

Appendices

Appendix 1: visitor interview scripts

1.1 Thames Basin Heaths

Jessie Barker and Zac Baynham-Herd will visit Thames Basin Heaths on Wednesday 18th December. We will visit one SANG and one SPA, and ask visitors the following questions:

1. Introduction (<1m): we're doing research to find out how people use the area, how to protect wildlife while ensuring people can still walk their dogs, enjoy the area etc. Do you mind if I record this [if we decide to do that] / take notes? - we won't record your name or any identifying information
2. Please tell us a bit about how you use the area (2m)
 - a. What are you doing here today?
 - b. How frequently do you come here? Do you always come here to [walk dog, whatever they're doing today]?
 - c. There are multiple sites that are part of Thames Basin Heaths - have you been to any others? What are the main reasons for you going to a particular area, e.g. close to your house, has a specific feature like a picnic area...?
3. If they have a dog (0-2m)
 - a. Do you tend to let it off the lead?
 - b. Can you tell us of any other areas nearby where you can let it off lead? Do you go there? If not, why?
4. This area is part of the Thames Basin Heaths partnership - we'd like to hear about your experiences in the area (2m)
 - a. This site is a [SANG/SPA] - have you heard that term before? If so, do you know what it means?
 - b. Are you aware of any measures to protect wildlife here? If so, what?
 - c. Have you seen any signs or leaflets in the area? Do you read them?
5. Other visitors' behaviour (2m):
 - a. Do you see many people walking dogs around here? Do they tend to be under control, or off the lead?
 - b. Do you ever notice wildlife being disturbed by other visitors (and/or their dogs)? If so, what have you seen happen?
6. Thanks for your time - do you have any questions for us?

1.2 Bird Aware Solent

Jessie Barker and Zac Baynham-Herd will visit Bird Aware Solent sites on Thursday 19th December, arranged by Lizzie Hibberd. We will ask visitors the following questions:

1. Introduction (<1m): we're doing research to find out how people use the area, how to protect wildlife while ensuring people can still walk their dogs, enjoy the area etc. Do you mind if I record this [if we decide to do that] / take notes? - we won't record your name or any identifying information
2. Please tell us a bit about how you use the area (2m)
 - a. What are you doing here today?
 - b. How frequently do you come here? Do you always come here to [walk dog, whatever they're doing today]?
3. If they have a dog (0-2m)
 - a. Do you tend to let it off the lead?
 - b. Can you tell us of any other areas nearby where you can let it off lead? Do you go there? If not, why?
4. This area is part of Bird Aware Solent - we'd like to hear about your experiences in the area (2m)
 - a. Have you heard of Bird Aware Solent? There are multiple sites that are part of Bird Aware Solent - have you been to any others?
 - b. What are the main reasons for you going to a particular area, e.g. is it close to your house, has a specific feature like a picnic area...?
 - c. Are you aware of any measures to protect wildlife here? If so, what?
 - d. Have you seen any signs or leaflets in the area? Do you read them?
5. Other visitors' behaviour (2m):
 - a. Do you see many people walking dogs around here? Do they tend to be under control, or off the lead?
 - b. Do you ever notice wildlife being disturbed by other visitors (and/or their dogs)? If so, what have you seen happen?
6. Thank you very much for your time - do you have any questions for us?

Appendix 2: full results of visitor survey

A. Using the area

1. When choosing somewhere to walk your dog, how important are the following to you?

Attribute of the area	Survey score (1 = not important, 5 = very important)		n
	Mean	SD	
Convenience of the location	3.94	1.24	36
Low cost (e.g. free parking)	3.97	1.30	36
Having somewhere I feel comfortable letting my dog run off the lead	4.42	1.07	35
Amenities on site (e.g. toilets, cafe)	2.09	1.06	34
Accessibility of the walking routes (e.g. buggy/wheelchair access or mud-free paths)	2.24	0.99	34
Ensuring my dog is safe (e.g. from ticks, snakes, rubbish etc.)	3.53	1.16	36
Ensuring my dog doesn't bother other people	3.23	1.21	35
Ensuring my dog doesn't disturb wildlife (e.g. birds, livestock)	3.60	1.19	35
My own enjoyment of nature (e.g. scenery, peace and quiet)	3.86	1.05	36
Social benefits (e.g. walking with friends, seeing people I know)	2.86	1.26	35

2. How often do you do the following when out with your dog in a Thames Basin Heaths area?

Activity	Survey score	n
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	(1 = never, 5 = very frequently)		
	Mean	SD	
Let my dog go off lead	4.52	0.99	64
Let my dog go off main paths	3.45	1.26	64
Go off main paths myself	2.57	1.30	63
Watch birds or other wildlife	3.66	1.30	64
See my dog interact with birds or other wildlife	1.81	0.92	64
See something that might endanger my dog	1.94	0.81	64
Use a car park and/or amenities there	4.02	1.18	64
Want an amenity that is missing, e.g. dog poo bins	3.34	1.37	64

3. If you answered "frequently" (score of 5) to any of the last three questions, please tell us a) what you have seen that might endanger your dog, b) what amenities you use, and c) what amenities you want that are missing

Most people when answering this question did not distinguish between the amenities they used and the amenities they want. Of 34 answers, 21 mentioned car parks and 21 mentioned dog poo bins; few other amenities were mentioned more than once. Of particular relevance to this project, one person mentioned wanting a dog agility course, and one mentioned wanting site maps. Few people listed dangers to their dogs: these included 2 mentions of adders, 2 mentions of poor fencing that allowed dogs to escape onto the road, and 3 mentions of other users at the site (cyclists, horse riders, livestock).

4. Regarding other visitors to Thames Basin Heaths, how often do you see the following?

Activity	Survey score (1 = never, 5 = very frequently)		n
	Mean	SD	
Other dogs off the lead	4.81	0.56	64
Other dogs off main paths	3.91	1.03	64

Other people off main paths	3.06	1.17	64
Birds or other wildlife disturbed by other people or dogs	2.27	1.07	64
Dog poo	3.75	1.22	64

B. Information about the area

5. How have you found out information about Thames Basin Heaths? (Please tick all that apply)

Source of information	Responses
From social media specific to dog-walkers, e.g. Heathland Hounds	26
From other Thames Basin Heaths social media	13
From Thames Basin Heaths website	0
Leaflets	25
Posters	8
Spoken to wardens	27
Other	<ul style="list-style-type: none"> • Surrey Wildlife Trust, Surrey Heathland Project, Worplesdon and district bridleways association • Greenspace on your Doorstep booklets • Heathland Hounds event at Heather Farm • Information table at Horsell Common • Word of mouth (4)

6. What types of information have you found out about Thames Basin Heaths? (Please tick all that apply?)

Type of information	Responses
Where the areas are and what amenities they have	51
Guidelines for visitor behaviour in the areas	38
Guidelines for dog behaviour in the areas	46
What wildlife I might be able to see	33

Why the areas are important for wildlife	44
Potential impacts on wildlife from visitors	35
Other	<ul style="list-style-type: none"> Potential dog thieves, antisocial behaviour (social media)

7. What are potential barriers for you to find out more about Thames Basin Heaths? (Please tick all that apply.)

Barrier	Responses
I'm not interested	5
The information I've found isn't relevant to me	4
I don't know where to look	16
Other	<ul style="list-style-type: none"> Some of your places are far enough away that I wouldn't visit so I have no incentive to find out more. information tend to be on-line so unless I plan ahead I am unable to find out that information unless it is on a notice board Would like to know where bridle paths are There is so much, it's sometimes confusing Time. There's plenty of information out there if you have time to look. Important to not be too preachy rather educational/share info that is more scientific for example the importance of poo because of how it can affect the growth of different plants No barriers (4 responses)

8. How much do you agree with the following statements related to nature and the environment?

Statement	Survey score (1 = strongly disagree, 5 = strongly agree)		n
	Mean	SD	
I consider myself to be a nature lover	4.63	0.72	64
Dog-walkers have a responsibility to look after the natural areas they walk their dogs in	4.71	0.58	63
Visitors to Thames	3.62	0.97	63

Basin Heaths areas can have negative impacts on wildlife			
I know about the two different types of areas here: Special Protection Areas (SPAs) and SANGs (Suitable Alternative Natural Greenspaces)	3.63	1.54	64

C. Local dog-walkers' groups

9. Have you heard about any local dog-walkers' groups, such as Heathland Hounds? (Please tick all answers that apply)

Source of information	Responses
From a warden from the Thames Basin Heaths partnership	15
At an event such as a school fair	2
From a friend/family member	6
Found a Facebook/Twitter page	24
Other	<ul style="list-style-type: none"> • Pit stop • Shared on local Facebook dog owners' group • Saw a leaflet at Turf Hill on the noticeboard

10. Are you a member of any of these groups?

39 people answered this question; 64.1% were members and 35.9% were not

11. If so, which one(s)?

21 people answered this question. 17 mentioned Heathland Hounds, and 5 mentioned other groups: Dog Owners Yateley and Fleet, Walking Group Yateley, Bracknell Dog Walkers, Crowthorne Dog Group, Bracknell Dog Owners/Walkers, Dog walking meet-up Berkshire & beyond, Surrey K9

12. If you are a member, why did you join? Please indicate how important each reason is for you (1 = not important, 5 = very important)

Reason	Survey score (1 = not important, 5 = very important)	n
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	Mean	SD	
To get information about where to walk my dog	4.30	1.02	47
To get information about the local area not related to my dog	2.27	1.14	45
To get dog-related information (not related to the local area), e.g. tips for training	2.46	1.22	46
To be part of a community	2.76	1.37	46

13. If you are not a member, why did you decide not to join any? Please indicate how important each reason is for you (1 = not important, 5 = very important)

Reason	Survey score (1 = not important, 5 = very important)		n
	Mean	SD	
I don't know much about them	2.92	1.75	13
I don't use social media	2	1.51	8
I don't feel like I am part of the community they include	2.63	1.85	8
I'm not interested in the information they provide	3.00	1.66	9

14. Additional comments

Most respondents did not leave additional comments; of those who did, we identified the following themes:

- People enjoyed being part of Heathland Hounds (although one respondent said they had never heard of them):
 - *“Very much enjoyed interaction with Heathland Hounds, helpful people, lots of freebies and a mince pie and bonio at christmas, what's not to like:)”*
 - *“Heathland Hounds has become a very rewarding community to be a member of.”*

- Some people were supportive of efforts to maintain areas for both visitors and wildlife, but others felt not welcome, or were sceptical of providing alternative spaces:
 - *“I hope you'll keep doing what you do and be visible at your sites and other countryside events. It's good to keep the public, dog-walkers, and those not familiar with dogs, informed and involved with their local environments, the wildlife there, and the people who might be visiting.”*
 - *“It would be great if you could securely fence off a couple of acres for dogs to run free, for dogs with poor recall, reactive dogs etc. Even a small charge could be applied. There are apps where you can book and pay for a field. and an income from it could pay for upkeep of fields and maintenance. Bramshott CP has a couple of places to fence off that would be ideal.”*
 - *“We are all part of nature and have survived side by side. Stop trying to ban us from our natural habitat!”*
 - *“SANGs will never work to redirect dog walkers unless and until they provide the same type / quantity of land that the SPA provides. Dog walkers (esp those of us with larger dogs) do not want short circular walks along neat formal paths following behind hordes of other people doing the same thing - but large open spaces where dogs can run free and where you can go off in another direction easily to avoid other walkers if you wish. We don't want nature reserves but space.”*
- Some people felt that they were already behaving responsibly, and were keen for dog-walkers to do more:
 - *“I would like to add that my responses are based on always following lead rules and visitor guidelines for myself and my dog - I walk my dog in different locations at all times of year and lead rules vary depending on whether birds are nesting etc”*
 - *“Dog walkers can help keep the paths clear by taking secateurs with them occasionally and snipping back overhanging and encroaching vegetation if they are given adequate guidance on what they can and must not do. Many already do this, but others should be encouraged to help as the paths can become almost impassable at times as the rangers and volunteers are not there frequently enough to keep them adequately pruned. We often have to stray slightly off the path just to get round gorse and brambles in places. We understand the importance of brambles as a habitat for wildlife and only snip of overhanging tips of branches. The dogs are only off the lead when the signs say they can be. Most people ignore the signs and allow their dogs off even when the birds are nesting or livestock are grazing. They become abusive when challenged. You should recruit volunteers at each place and give them badges which would give them more credibility to challenge people.”*
 - *“Also, I've not answered 2 question in the first section as they are N/A to me. My dogs are trained not to bother others: wild life, people, dogs.”*