FOOTPRINT ECOLOGY

Recreation use of the New Forest SAC/SPA/Ramsar:

New Forest visitor survey 2018/19

Durwyn Liley, Chris Panter, Zoe Caals & Phil Saunders

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Summary

This report presents the results of visitor survey work across the New Forest SPA/SAC/Ramsar in 2018/2019. The survey has been commissioned by Test Valley Borough Council on behalf of a partnership which also includes Eastleigh Borough Council, New Forest District Council, New Forest National Park Authority, Southampton City Council and Wiltshire Council. The work has been supported by Natural England and Forestry England.

Surveys took place at 60 locations, mostly car parks across the New Forest SPA/SAC/Ramsar. At each location, 40 hours of survey work were conducted, split to cover a weekday and a weekend day in the autumn/winter (October – November), a weekday and a weekend day in the spring (April – May) and a single day in the summer (late July – August, school holiday period). Surveys were broken into two-hour periods that were spread to cover different parts of the day (i.e. including early mornings and late evenings). Tally counts of people, dogs, bikes and horses were maintained for each two-hour survey period and a random selection of people seen were approached and interviewed.

Key findings included:

- The counts generated an hourly rate of 4.7 groups, 9.7 people (including minors – those thought to be under 18 years old), 3.7 dogs, 1.6 minors, 0.9 bikes and 0.1 horses entering/passing through the survey point, averaged across all locations and seasons.
- Typical group size from the tally counts was 2.1 people, accompanied by 0.8 dogs and including 0.3 minors.
- In total 5,236 interviews were conducted.
- 83% of interviewees were on a short visit directly from home that day. Those staying away from home on holiday accounted for 14% of interviewees and a further 2% were staying with friends or family.
- During the summer there were relatively more holiday makers (22%) and fewer day visitors (76%), compared to the spring (12% and 85% respectively) and the winter (11% and 86%).
- For most interviewees the main activity was given as either dog walking (55%) or walking (26%). No other single main activity was named by more than 5% of interviewees.
- Dog walking was very much focussed around the peripheral areas of the SPA/SAC, while walking (without a dog) was the most common main activity at the more central survey locations. Cyclists were interviewed at scattered locations but notably those around Brockenhurst and also at Burbush Hill
- Overall, 61% of interviewees were accompanied by at least one dog and the maximum number of dogs per interviewed group was 12. In total, 4,807 dogs were counted accompanying interviewees, giving an average of 0.9 dogs per interviewee.
- Dog walkers accounted for a slightly lower proportion of visitors in the summer compared to the other times of year. 60% of dogs were seen off lead by the surveyor during the interview.

- 26% of interviewees tended to visit the New Forest SPA/SAC/Ramsar site on a daily basis.
- Dog walkers were the most regular visitors, with 41% of dog walkers indicating they visited on a daily basis and a further 14% of dog walkers indicating they visited more than once per day.
- Typical visit duration for all interviewees was around 95 minutes. Those visiting to play golf and for Duke of Edinburgh tended to visit for longer and those dog walking and running typically had relatively short visits.
- 64% visited equally all year round and did not tend to visit at a particular time of year.
- 90% had arrived by car/van or other motor vehicle.
- Reasons given for the choice of specific location to visit that day included: close to home (or work or holiday accommodation) (25%), previous knowledge or familiarity (16%), quick & easy travel route (10%), scenery/variety of views (10%) and for a change/variety (10%). Some 2% had stopped at random and 1% had been deflected from other locations because they were full or because the car park was shut.
- Interviewee routes were mapped as part of the interview. Route lengths tended to be shorter in the summer (for dog walkers and cyclists at least) and cyclists tended to do much longer routes than the other activities.
- Across all seasons, the typical (median) dog walk was 2.7km, typically extending to 922m from the start point. For walkers the equivalent values were 3.2km and 1,004m and for cyclists 12km and 2,828m.
- Factors influencing the choice of route included: previous knowledge of the location (22%), time available (13%), weather conditions (such as shade or shelter etc.,12%), following a marked trail or the paths available (12%) and activity specific factors (such as where the buggy could go, golf course etc., also 12%).
- Maps were the most commonly cited type of information used to plan interviewee's visits (15% of interviewees), followed by websites (8%) and recommendations from friends or family (7%).
- 67% of interviewees were aware of a wildlife habitat or species that could be affected by recreation and could give a named example. Breeding birds (including 'ground-nesting birds') were the most commonly named concern (40% of interviewees).
- For those interviewees on a short visit or day trip, travelling directly from home that day, 41% indicated that all their visits for their chosen activity took place within the New Forest SPA/SAC/Ramsar.
- A wide range of other, alternative locations were given. Those most frequently cited included Hengistbury Head (4%), Lepe Country Park (3%), Barton-on-sea/Barton-on-sea beach (2%), Purbeck (2%), Lymington Marshes (2%), Highcliffe/Highcliffe Beach (3%), Southampton Common (2%), South Downs (2%) and Bournemouth Beach (2%).
- The was little difference in the proportion of interviewees that would use a new Country Park or improved footpath network away from the New Forest SPA/SAC/Ramsar site, suggesting relatively little difference in these as mitigation approaches.
- 4,871 interviewees (91%) gave a full, valid UK postcode that could be geocoded using the national database.
- The Bournemouth/Poole conurbation was the single built-up area from which the most interviewees originated (12%), with the South Hampshire built-up area second (9%).
- 20% of interviewees on a short visit or day trip from home that day gave postcodes within the National Park boundary. A further 40% came from outside the National Park but

within the New Forest District. Other local authorities accounted for relatively small proportions of the interviewees in comparison.

- 62% of interviewees lived within a 5km radius of the New Forest SPA/SAC/Ramsar site boundary. The median distance for all interviewees from their home postcode to the interview location was 7.75km and 75% originated from within 21.4km; for those on a short visit/day trip from home, the equivalent values were 6.1km and 13.8km.

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Acknowledgements

1.   Introduction

Overview

1.1   This report, commissioned by a partnership of local authorities with funding from central government, is part of a series that relates to understanding the impacts of recreation (arising from new housing development) on the New Forest international nature conservation designations. The various studies are intended to inform necessary mitigation approaches.

1.2   In this report we present the results of visitor surveys carried out within the boundaries of the New Forest international nature conservation designations. The work provides detailed information on visitor profiles, access patterns and visitor origins.

Relevant legislation

1.3   The designation, protection and restoration of key wildlife sites is embedded in the Conservation of Habitats and Species Regulations 2017 (as amended), which are commonly referred to as the 'Habitats Regulations.' These Regulations are in place to transpose European legislation set out within the Habitats Directive (Council Directive 92/43/EEC), which affords protection to plants, animals and habitats that are rare or vulnerable in a European context, and the Birds Directive (Council Directive 2009/147/EC), which originally came into force in 1979, and which protects rare and vulnerable birds and their habitats. These key pieces of European legislation seek to protect, conserve and restore habitats and species that are of utmost conservation importance and concern across Europe. European sites include Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) classified under the Birds Directive. Ramsar sites, those wetlands of international importance that are listed in the Ramsar Convention are, through government policy, are also treated as European sites.

1.4   Public bodies, including local planning authorities, have specific duties in terms of avoiding deterioration of habitats and species for which sites are designated or classified, and stringent tests have to be met before plans and projects can be permitted. Importantly, the combined effects of individual plans or projects must be taken into account. For local planning authorities, this means that the combined effect of individual development proposals

needs to be assessed collectively for their cumulative impact, as well as on an individual basis.

The New Forest

1.5   The New Forest is one of the largest tracts of semi natural vegetation in the country, and as such is one of our most important wildlife sites. The area hosts three international wildlife site designations and is closely located to other international wildlife sites such as the Solent and Southampton Water.

1.6   The New Forest is classified as a SPA for its breeding and overwintering bird species of European importance, in accordance with the European Birds Directive. The designation relates to internationally significant breeding populations of Dartford Warbler *Sylvia undata*, Nightjar *Caprimulgus europaeus*, Woodlark *Lullula arborea*, Honey Buzzard *Pernis apivorus*, Hobby *Falco subbuteo* and Wood Warbler *Phylloscopus sibilatrix* and over-wintering Hen Harrier *Circus cyaneus*.

1.7   The New Forest is also designated as a SAC for its habitats and non-avian species of European importance, in accordance with the European Habitats Directive. This designation reflects the unique mosaic of habitats across the New Forest, which includes eight Annex 1 heathland, grassland, woodland, wetland, bog and open water habitats, together with three Annex 2 species, Stag Beetle *Lucanus cervus*, and Southern Damselfly *Coenagrion mercuriale*, and Great Crested Newt *Triturus cristatus*.

1.8   Also relevant is the New Forest's listing as a Ramsar site, under the Ramsar Convention. This recognises the international importance of the site as a wetland, supporting wetland flora and fauna of international importance, and adding to the global network of Ramsar listed wetlands.

Housing growth and recreation impacts

1.9   A challenging issue for UK nature conservation is how to respond to increasing demand for access without compromising the integrity of protected wildlife sites. Areas that are important for nature conservation are often important for a range of other services, including the provision of space for recreation for an increasing population. Such recreation space can be used for a wide variety of activities, ranging from the daily dog walks to competitive adventure and endurance sports.

1.10   There is now a strong body of evidence showing how increasing levels of access can have negative impacts on wildlife. Visits to the natural environment have shown a significant increase in England as a result of the increase in population and a trend to visit more (O'Neill, 2019). The issues are particularly acute in southern England, where population density is highest. Issues are varied and include disturbance, increased fire risk, contamination and damage (for general reviews see: Liley et al., 2010; Lowen, Liley, Underhill-Day, & Whitehouse, 2008; Ross et al., 2014; Underhill-Day, 2005).

1.11   The issues are not however straightforward. It is now increasingly recognised that access to the countryside is crucial to the long term success of nature conservation projects, for example through enforcing pro-environmental behaviours and a greater respect for the world around us (Richardson, Cormack, McRobert, & Underhill, 2016). Access also brings wider benefits to society that include benefits to mental/physical health (Keniger, Gaston, Irvine, & Fuller, 2013; Lee & Maheswaran, 2011; Pretty et al., 2005) and economic benefits (ICF GHK, 2013; ICRT, 2011; Keniger et al., 2013; The Land Trust, 2018). Nature conservation bodies are trying to encourage people to spend more time outside and government policy is also promoting countryside access in general (e.g. through enhancing coastal access).

1.12   There are two statutory purposes for national parks in England and Wales. The first is to conserve and enhance natural beauty, wildlife and cultural heritage and the second is to promote opportunities for the understanding and enjoyment of the special qualities of national parks by the public. This second purpose includes opportunities for open air recreation. However, if it appears that there is a conflict between the two National Park purposes, the Environment Act 1995 requires greater weight to be attached to the purpose of conserving and enhancing the natural beauty, wildlife and cultural heritage of the National Park (this is known as the Sandford Principle[1]). When national parks carry out these purposes, they also have the duty to encourage the social and economic well-being of local communities within the national park.

1.13   There is therefore, a significant challenge: to avoid or mitigate potential negative impacts associated with recreation so as to comply with legislation

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[1] Named after Lord Sandford, who chaired the 1974 National Parks Policy Review Committee.

without compromising the ability of people to be outside enjoying sites for recreation.

Aims of this work

1.14   The New Forest has a particular draw for recreation, and it is unique in scale and the recreation opportunities it provides. Previous work has considered the recreation impacts and links to new development (Fearnley, Hoskin, Liley, White, & Lake, 2012; e.g. Sharp, Lowen, & Liley, 2008) and also highlighted the range of use that includes both use by local residents living in or near the New Forest as well as visitors from a wide area including tourists. Previous visitor survey work on the New Forest (Tourism South East Research Services & Geoff Broom Associates, 2005) extended to the whole National Park estimated 13.5 million visitor days to the New Forest. More recent work (RJS Associates Ltd., 2018) estimated that figure had increased to 15.2 million visitor days for recreation and leisure in 2017 and estimated it could rise to 17.6 million visitor days by 2037.

1.15   In order to better understand the relative draw of the New Forest and the links between housing and recreation use, the on-site visitor survey was commissioned to:

- To understand the types of recreational use and patterns of access by visitors to the heathland and woodland parts of the New Forest;
- To better understand where recreational visits to the New Forest originate from;
- To be able to establish the links between where people live and the patterns of recreational use.

Other reports

1.16   This report solely relates to on-site visitor work involving counts of people and interviews with visitors at locations across the heathland and woodland parts of the New Forest. The work forms part of a series of reports that relates to understanding the impacts of new development on the New Forest international nature conservation designations. The project as a whole involves visitor surveys combined with work to understand the impacts of recreation and relevant mitigation approaches. Other reports, produced in parallel with this one, include:

- **Recreation use of the New Forest SAC/SPA/Ramsar: New Forest vehicle counts 2018/19 –** results of vehicle counts across

the New Forest SAC/SPA/Ramsar car parks, counting all parked vehicles on a range of different dates over a year;

- **Recreation use of the New Forest SAC/SPA/Ramsar: Results of a telephone survey with people living within 25km** - the results of a telephone survey with 2,000 residents living within a 25km radius of the woodland/heathland areas of the New Forest SAC/SPA/Ramsar;

- **Recreation use of the New Forest SAC/SPA/Ramsar: Overview of visitor results and implications of housing change on visitor numbers** - a summary of the visitor survey results, drawing the findings from the telephone survey, on-site survey and vehicle counts together and making predictions for change in recreation as a result of new housing.

- **Recreation use of the New Forest SAC/SPA/Ramsar: Impacts of recreation and potential mitigation approaches** – sets out the impacts of recreation and provides options for mitigation and avoidance.

1.17   This study is the first that has specifically considered visitors to the New Forest SAC/SPA/Ramsar. Previous work looking at visitor numbers and their activities and impacts in the New Forest includes *A Survey of Recreation Visits to the New Forest National Park* (Tourism South East Research Services & Geoff Broom Associates, 2005).

2.   Methods

Overview

2.1   Visitor survey work involved interviews and counts of people at a sample of locations across the New Forest SPA/SAC. The counts provide an overview of visitor flows at each point and the visitor interviews, involving a random sample of people, provide data on visitor origins, visitor profile and factors that influence behaviour.

Selection of survey points

2.2   60 survey points were selected, based on the following criteria:

- They provided access onto the New Forest SPA/SAC;
- They provided a good geographic spread;
- Locations included those easily accessible from outside the National Park and on the main routes and arteries into the New Forest, i.e. directly accessible from settlements outside the New Forest;
- They broadly represented the different types of access points, including formal car parks, more informal parking and pedestrian access direct from housing;
- They worked well from a practical perspective, for example to safely and easily intercept visitors to interview.

2.3   An initial selection of 50 potential locations was made based on GIS data and using the following steps:

1. Car park data were combined in the GIS to give a single file of car parking locations within the National Park focussed around the New Forest SPA/SAC. This layer was derived from:

   o GIS data provided by the steering group (including 128 Forestry England car parks and 14 other car parks);
   o 134 informal parking locations (lay-bys etc.) within the New Forest SPA/SAC and identified from aerial photographs.

2. These car parks were then categorised according to which part of the New Forest they fell within, based on three broad sections (north of A31; south of the A31 and east of A337 (Lyndhurst-Brockenhurst) or south of the A31 and west of the A337). The number of locations chosen within each sector was directly in proportion to the number of parking locations identified in each,

giving 15 locations in the north, 14 in the south and 21 in the south-west

3. Locations within each sector were identified based on the parking capacity, i.e. ranking by capacity and selecting locations based on a stratification according to the proportion of the total capacity within the sector.

2.4 This initial map was shared with the steering group and provided the foundation for the final selection, following advice and discussion. Locations that were removed included those with seasonal closures (such as the Reptile Centre). Points were added where there were clear gaps in the spatial coverage and in particular to include locations around the periphery and along major routes (i.e. accessible for people living outside the New Forest SPA/SAC). Two additional locations were added that were predominantly pedestrian access points, with the survey point close to housing and in a good location to intercept visitors and in addition Bolderford Bridge was included – this has no parking adjacent and is a river crossing point reasonably close to Brockenhurst. It is also on a cycle route and therefore a good location to intercept people passing, potentially including residents from Brockenhurst.

2.5 The final selection of locations are shown in Map 1 and Table 1.

Map 1: Survey points for face-face interviews and direct counts
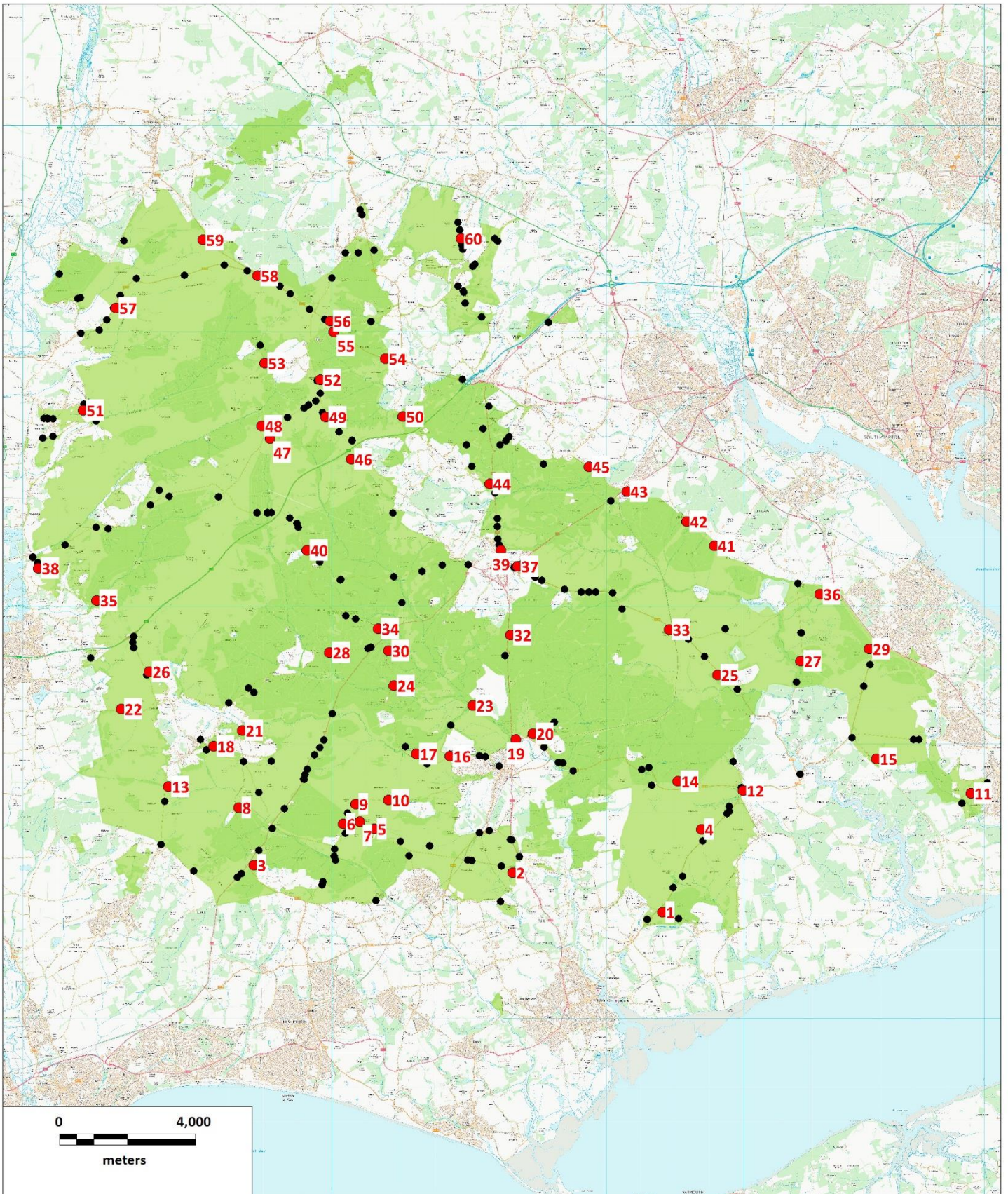
Survey points

Other parking locations (not surveyed)

New Forest SPA/SAC

0   4,000

meters

Contains Ordnance Survey Data. © Crown Copyright and Database Right 2018.
Designated site boundaries downloaded from Natural England website. © Natural England.

Table 1: Survey locations

Map ref	Name	Ownership	Approx. parking capacity	Type
1	Norley Wood	Forestry England	35	Formal Car park
2	Setley Pond	Forestry England	40	Formal Car park
3	Brownhills	Forestry England	20	Formal Car park
4	Beaulieu Heath	Forestry England	100	Formal Car park
5	Horseshoe Bottom	Forestry England	60	Formal Car park
6	Wilverley Inclosure	Forestry England	110	Formal Car park
7	Longslade Heath	Forestry England	50	Formal Car park
8	Holmsley	Forestry England	15	Formal Car park
9	Wilverley Pit	Forestry England	30	Formal Car park
10	Hincheslea Moor	Forestry England	15	Formal Car park
11	Blackwell Common	Forestry England	20	Formal Car park
12	Hatchet Pond	Forestry England	50	Formal Car park
13	Burbush Hill	Forestry England	15	Formal Car park
14	Hawkhill	Forestry England	25	Formal Car park
15	Moonhills	Forestry England	70	Formal Car park
16	Beachern Wood	Forestry England	30	Formal Car park
17	Whitefield Moor	Forestry England	100	Formal Car park
18	Burley Cricket	Forestry England	35	Formal Car park
19	Balmer Lawn	Forestry England	30	Formal Car park
20	Tilery Road	Forestry England	30	Formal Car park
21	Mill Lawn	Forestry England	20	Formal Car park
22	Smugglers Road	Forestry England	10	Formal Car park
23	Bolderford Bridge		0	Pedestrian
24	Blackwater	Forestry England	80	Formal Car park
25	Pig Bush	Forestry England	50	Formal Car park
26	Vereley	Forestry England	25	Formal Car park
27	Kings Hat	Forestry England	35	Formal Car park
28	Anderwood	Forestry England	50	Formal Car park
29	Dibden Inclosure	Forestry England	62	Formal Car park
30	Brock Hill	Forestry England	40	Formal Car park
31	Heath roundabout Pegasus crossing		0	Pedestrian
32	Clayhill Heath	Forestry England	35	Formal Car park
33	Shatterford	Forestry England	35	Formal Car park
34	Knightwood Oak	Forestry England	65	Formal Car park
35	Linford Bottom	Forestry England	65	Formal Car park
36	Marchwood Inclosure	Forestry England	30	Formal Car park
37	Boltons Bench	Forestry England	20	Formal Car park
38	Rockford Common	National Trust	40	Formal Car park
39	Racecourse View		20	Lay-by/Verge
40	Bolderwood	Forestry England	80	Formal Car park
41	Longdown	Forestry England	15	Formal Car park
42	Deerleap	Forestry England	60	Formal Car park
43	Ashurst	New Forest D.C.	23	Formal Car park
44	Minstead Road	Forestry England	30	Formal Car park

Map ref	Name	Ownership	Approx. parking capacity	Type
45	Phone box on Woodlands Rd.		6	Gateway/Start of Track
46	Andrews Mare	Forestry England	30	Formal Car park
47	Ocknell Pond	Forestry England	30	Formal Car park
48	Cadmans Pool	Forestry England	40	Formal Car park
49	Stoney Cross	Forestry England	100	Formal Car park
50	Rufus Stone	Forestry England	25	Formal Car park
51	Abbots Well	Hampshire C. C.	80	Formal Car park
52	Janesmoor Pond	Forestry England	100	Formal Car park
53	Fritham	Forestry England	40	Formal Car park
54	Roundhill	Forestry England	75	Formal Car park
55	Longcross	Forestry England	50	Formal Car park
56	Bramble Hill Walk	Forestry England	15	Formal Car park
57	Ashley Walk	Forestry England	25	Formal Car park
58	Telegraph Hill	Forestry England	5	Formal Car park
59	Turf Hill	Forestry England	30	Formal Car park
60	West Wellow	Wellow Parish C.	12	Formal Car park

Survey approach

2.6   At each survey point, surveyors maintained a tally of visitors using the site during the survey periods, recording numbers of groups, people, minors[2], horses, cycles and dogs. Counts were typically split into those entering, leaving or passing through, but these varied with the location. Most locations were car parks, where someone 'entering' would be leaving the car park to access the surrounding countryside and someone 'leaving' would be returning to their vehicle. Those who cycled or walked through the car park were recorded as 'passing through'.

2.7   A record was also kept of the number of refusals, i.e. where someone was approached and declined to be interviewed.

2.8   Surveyors conducted face to face interviews with a random selection of visitors (by selecting the next person they see after completing the previous interview). Only one person per group were interviewed, and no unaccompanied minors were.

2.9   Interviews were conducted on tablets hosting SNAP survey software. The questionnaire (Appendix 1) included questions relating to access patterns and behaviour, visitor profile, home postcode and the route taken. At the end of the interview the surveyor also recorded – from observation – information relating to the group size, gender of interviewee, number of dogs in group and whether dogs were seen off lead.

2.10   Routes taken by respondents (or planned to be taken if they were just setting off) were recorded by drawing the visitor's route on a paper map linked by a unique reference number to the SNAP questionnaire. The routes were plotted interactively, with the surveyor checking with the interviewee regarding landmarks and features on the ground. Different scale maps were available allowing long routes (e.g. cycling etc.) to be plotted as well as very short walks. Routes were later digitised to give a polyline in GIS as a single polyline for each interview.

Survey timings

2.11   Each survey point was surveyed for:

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[2] Those thought to be under 18 years old

- A weekday and a weekend day in the autumn/winter (October – November)
- A weekday and a weekend day in the spring (April – May)
- A single day in the summer (late July – August, school holiday period), with 30 survey points surveyed on weekdays and 30 survey points on weekend days.

2.12   Survey effort was spread across the survey dates set out above, ensuring the risk of bad weather is minimised. As far as possible survey visits were rescheduled to avoid particularly adverse weather conditions.

2.13   Each 'day' of fieldwork involved 8 hours of survey work, split into two-hour sessions. These reflected daylight hours:

- Autumn: 0700-0900; 0930-1130; 1230-1430; 1500-1700;
- Spring: 0700-0900; 1000-1200; 1300-1500; 1600-1800;
- Summer: 0700-0900; 1000-1200; 1400-1600; 1700-1900.

2.14   This level of survey effort meant that each location was surveyed for a total of 40 hours, with comparable weekend/weekday effort and timings for the winter and spring.

2.15   Horseshoe Bottom (location 5) was closed during the spring surveys and therefore the nearest alternative car park (Longslade Bottom) was surveyed instead. Throughout the results, where we summarise or present data by survey point, we do not include Longslade Bottom as a separate location and instead "Horseshoe Bottom" results include the Longslade Bottom data.

Data presentation and analysis

2.16   Tally data were collated and summarised as people/groups/dogs/bikes/ horses entering, leaving or passing through. In order to give hourly rates of people going through the access point we combined people passing and people entering, broadly representing the number of people spreading out from the survey point into the woodland/heathland.

2.17   Activity-type was recorded in the questionnaire based on the response of the interviewee, rather than any interpretation of the surveyor (i.e. no attempt was made to ensure all those with binoculars were logged as wildlife watching or those with dogs logged as dog walking).

2.18   Route data were digitised as polylines with a GIS (QGIS version 3.4.5). For each polyline we calculated the overall length, the length that was within the New Forest SPA/SAC and also the 'penetration' distance, which was

calculated as the distance between the interview location and the mid-point of the polyline. This broadly represents (for those people doing a circular route from a car park or other entry point) how far people ranged from the entry point before turning back, or for those doing a linear route from one location to another, the mid-point of that route.

2.19   Interviewees who indicated they visited other sites (in Q17, see Appendix 1) were subsequently asked to name another location they visit for the given activity. Responses were recorded as free text and subsequently checked and standardised to correct spelling and ensure consistency. Where the same location was clearly referred to under different names (e.g. 'Moors Valley', 'Moors Valley Country Park') a single, consistent name was used. Where there was some ambiguity and it was not clear the same location was being referred to, different names were retained (e.g. 'Bournemouth' and 'Bournemouth Beach'). Lymington Marshes was however used as a consistent name to encompass 'Lymington sea wall', 'Lymington salterns', 'Lymington coast' and 'Lymington seafront'. Pennington Marshes and Keyhaven Marshes were kept separate, although it's likely there will be some overlap between all three. We used Hurst Spit to include both Hurst Castle and Hurst Beach and similarly Lepe Country Park was used for responses such as 'Lepe', 'Lepe Beach' and 'Lepe Country Park'. We also grouped responses according to the following broad categories of site:

- **Coast**: only if the interviewee's answer included 'beach', 'coast' or 'cliffs', unless it is obvious from the site name that it is by the coast e.g. Hengistbury Head.
- **Other NP**: if the interviewee mentioned another UK national park, or a site e.g. Old Winchester Hill that is known to be within another national park
- **Country Park**: flags those sites that are country parks e.g. Moors Valley
- **Other parts of New Forest**: only those sites that are within the New Forest SPA/SAC boundary e.g. Hatchet Pond, Deerleap
- **Long distance path**: national trail or long distance footpath e.g. South West Coast Path, Itchen Way
- **Vague/unspecified**: not enough information to identify a single site e.g. local streets, local beaches. Also includes large areas such as 'Dorset', 'Purbeck', 'Jurassic Coast'.

2.20   Home postcodes given by interviewees were georeferenced against a national database, allowing the visitor origins to be mapped. Where we have

summarised postcode data by settlement we have used the built-up area data available from the Office of National Statistics[3]

2.21   All data analysed with statistical tests were not normally distributed (usually positively skewed, with a small number of very high outlier values), and therefore we used non-parametric tests and typically give median values. Box plots are often used to explore these data and show median values (horizontal lines), interquartile range of 25-75% of the data values (boxes) and the upper and lower limits of the data range (whiskers). Mean values have been overlaid, shown as crosses, and all data points as circles.

2.22   The tally data were analysed using generalised linear models (GLMs) in the computer program 'r'[4]. A global model was produced, combining a large combination of initial parameters, which was then interrogated using the 'dredge' function in the MuMIn package[5]. Dredging explores all potential models which can be constructed from varying combinations of the parameters included in the global model. Each model's goodness-of-fit was then assessed using the Akaike Information Criterion adjusted for small sample sizes (AICc), and the model with the lowest AICc value selected. Significant parameters within the final model were also identified.

2.23   The global model included the following parameters, in addition to terms describing interactions between them: season; day type (weekday/weekend); survey location name; time period (early/late morning and early/late afternoon); rainfall level; cloud cover, and temperature (cool, mild, warm and hot). In order to account for the different number of parking spaces available at each interview location, an offset of log(capacity) was applied. Weights were also applied to the data used in the model to account for the greater number of surveys carried out in the winter and spring than in the summer months.

2.24   In the final analysis section, we have use multiple metrics from the visitor data to identify different types or groups of visitors. Visitor data were summarised by survey point and then by distance bands. 10 distance bands were used, with the band width determined by sample size to give an equal

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[3] https://geoportal.statistics.gov.uk/datasets/built-up-areas-december-2011-boundaries-v2?geometry=-50.972%2C41.218%2C49.312%2C60.310

[4] R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

[5] Kamil Barton (2019). MuMIn: Multi-Model Inference. R package version 1.43.6.

count i.e. the same number of interviewees in each band. The data were summarised as the count of interviewees in each group within the metric examined. Values were examined as a correlation matrix which allowed identification of metrics which were highly related to each other. Visitor metrics were also analysed using a Principal Component Analysis (PCA), This approach transforms a large number of variables into a smaller set of variables or principal components. For the summary by survey point, where samples sizes (interviewees) were not equal, we used the number of samples as a weighting. The PCA creates a series of principal component variables with combined ever-increasing overall explanation of the variation. The first two variables are used as the two main axes in PCA plots, (the percentage of variability for each axis is given on the axis label). Variables used in the PCA are shown on the graph as red arrows, which show the direction of the variable within the two axes. Informed by the results of the PCA, we categorised visitors in set groups and discuss the visitor profiles created.

3.   Results: tally counts

3.1   In total 9,593 groups, comprising 19,713 people, were counted entering during the survey work, across all seasons (Table 2). The number of dogs counted entering was 8,335 and there were also 3,207 minors, 1,109 bikes and 76 horse riders. Counts were also made of people leaving and passing through (see Table 2).

3.2   These count data are derived from 2,400 hours of fieldwork. Using the combined data for entering and passing through gives an hourly rate of 4.7 groups, 9.7 people (including minors), 3.7 dogs, 1.6 minors, 0.9 bikes and 0.1 horses per survey hour, averaged across all locations and seasons. These figures indicate a typical group size of 2.1 people, accompanied by 0.8 dogs and including 0.3 minors.

Table 2: Summary of tally data by season and type of day. Note that the data for winter and spring are directly comparable (same level of survey effort at each location) whereas during the summer the survey effort was different. WD = weekday; WE = weekend day.

	Count unit	Winter		Spring		Summer		All		Total
		WD	WE	WD	WE	WD	WE	WD	WE	
Entering	Groups	1,495	2,065	1,566	2,248	971	1,248	4,032	5,561	9,593
	People (inc minors)	2,376	4,446	2,755	4,931	2,083	3,122	7,214	12,499	19,713
	Total dogs	1,610	1,617	1,621	1,894	766	827	3,997	4,338	8,335
	Minors	215	643	396	914	419	620	1,030	2,177	3,207
	Bikes	51	294	87	286	158	233	296	813	1,109
	Horse riders	24	18	7	20	0	7	31	45	76
Leaving	Groups	1,381	1,911	1,571	2,222	955	1,119	3,907	5,252	9,159
	People inc minors	2,113	3,983	2,767	5,025	2,066	2,604	6,946	11,612	18,558
	Dogs	1,574	1,564	1,599	1,805	772	811	3,945	4,180	8,125
	Minors	160	594	405	988	470	486	1,035	2,068	3,103
	Bikes	31	202	94	293	117	214	242	709	951
	Horse riders	12	15	5	11	4	9	21	35	56
Passing	Groups	184	500	238	402	157	229	579	1,131	1,710
	People inc minors	336	955	464	996	378	526	1178	2477	3655
	Dogs	119	114	86	129	51	71	256	314	570
	Minors	42	100	71	236	124	76	237	412	649
	Bikes	53	244	159	223	160	186	372	653	1025
	Horse riders	21	85	31	63	21	36	73	184	257

3.3   Tally data are summarised by survey point in Map 2. The top map shows relative proportions of counts for the winter and spring (both with 16 hours

of survey) and the summer (8 hours survey effort), with the size of the circles reflecting the total numbers of people counted (including minors) both entering and passing through. There is relatively little evidence of particular clusters with similar patterns, however the central survey points around Brockenhurst and Lyndhurst all have relatively high counts for the summer surveys. The lower map shows the number of groups, dogs, minors, cyclists and horse riders counted at each location. It can be seen that the peripheral locations, particularly those towards Southampton Water on the eastern side of the Forest and those near Ringwood, have high numbers of dogs, with some locations averaging more than 1 dog per group. Locations with high counts of cyclists were typically around Brockenhurst while there were no locations with relatively high numbers of horse riders.

3.4   Modelling of the combined numbers of individuals entering and passing each location identified a number of significant relationships, with the model output statistics provided in Appendix 2. It should be noted that 2 of the interview survey locations (Bolderford Bridge and Heath Roundabout Pegasus Crossing) were excluded from the global model, as it was not possible to estimate a capacity value for these 'roving' locations.

3.5   The final model indicated that larger numbers of individuals are likely to use the interview locations on weekends, and on dry, warm or hot, days with limited cloud cover rather than on wet, cold, and cloudy days. Furthermore, more individuals will use the locations in the late morning, and fewer will do so in the early morning or late afternoon.

3.6   The retention of individual locations in the model was usually associated with a positive relationship with the number of individuals using the locality. Nevertheless, various interaction terms were also retained, which are often more difficult to interpret. These are generally however indicative of increased use of locations during the summer months, and reduced usage during the winter.

Map 2: Tally data
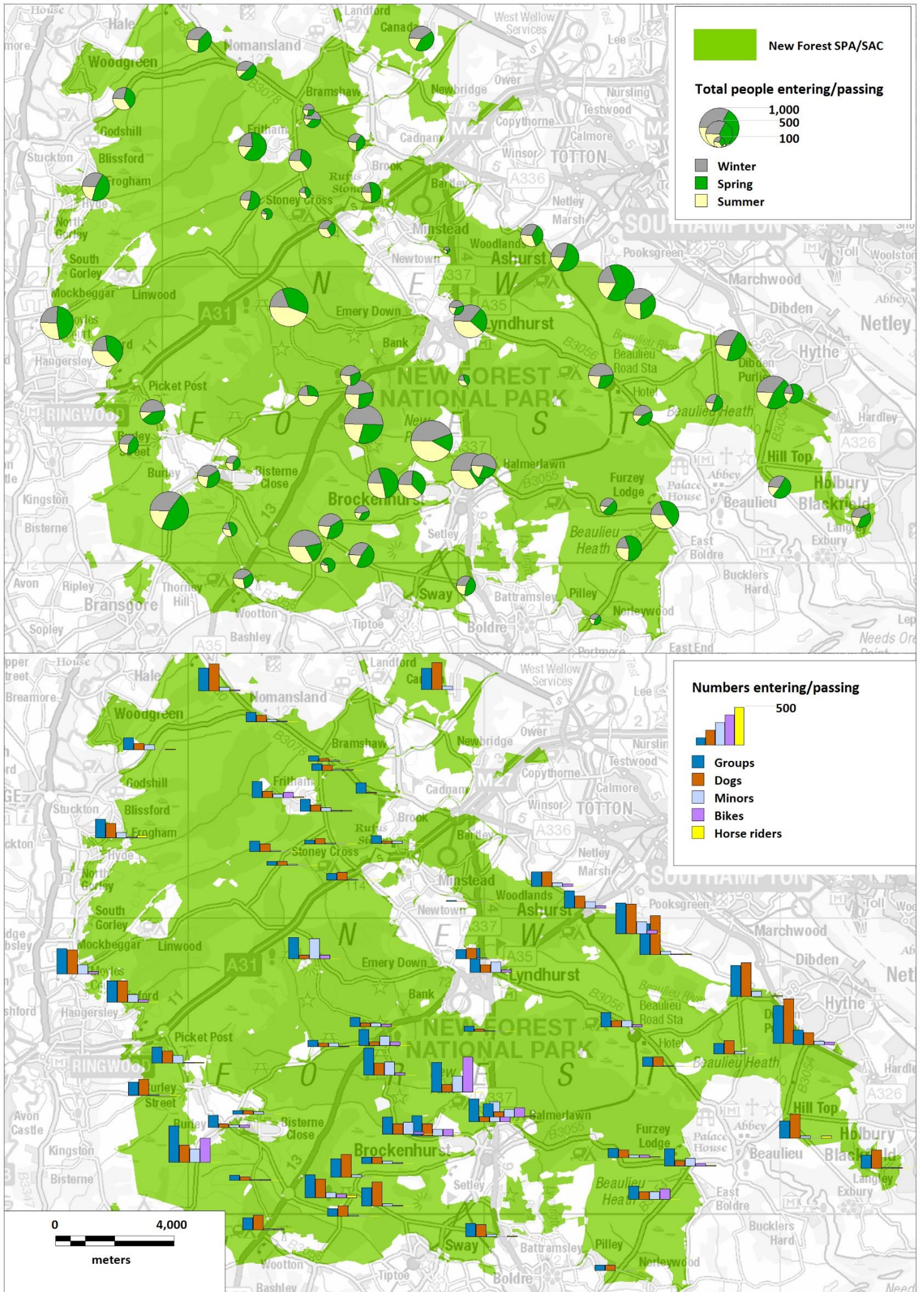
Legend (top map):

New Forest SPA/SAC

Total people entering/passing
- 1,000
- 500
- 100

- Winter
- Spring
- Summer

Legend (bottom map):

Numbers entering/passing
- 500
- Groups
- Dogs
- Minors
- Bikes
- Horse riders

0   4,000

meters

Note: Following site locations slightly offset to make pies more visible: Hinchelsea Moor, Wilverley Inc, Longslade Hill, Ocknell Pond & Heath Roundabout
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4.   Results: interview data

Overview of interview data

4.1   In total 5,236 interviews were conducted. 2,215 (42%) interviews were during the spring, 1,954 (37%) during the winter and 1,157 (22%) during the summer (when survey effort was half that of the other times of year).

4.2   The number of interviews per survey location (Figure 1) ranged from 19 (at Minstead Road) to 170 (at Marchwood Inclosure). Data are summarised by survey point in Appendix 3, which gives the totals of the number of interviews at each location (by season) and the typical group sizes at each location.

4.3   For those interviewees where the gender was recorded by the interviewee, slightly more (51%) of interviewees were female compared to male (49%).

4.4   Group size (i.e. the number in the interviewed party) ranged from 1 – 59. The most commonly recorded group size was one (i.e. people on their own) (2164 interviewees, 41%). Groups with more than twenty people were mostly organised events and included a fungal foray, a church group, a works barbeque, a family get together, a WI group and a Duke of Edinburgh Group (the latter being the group of 59). In total, 50 interviewees (1%) were noted as appearing to be part of an organised group.

4.5   The average group size for the interviewees was 2.1 people, with an average of 0.6 minors included. In total 906 (17%) of interviewed groups included minors.

4.6   3,234 interviewees (61%) were accompanied by at least one dog. Around two-thirds (2,164, 67%) of those interviewees with a dog just had one dog with them. The maximum number of dogs per interviewed group was 12. In total, 4,807 dogs were counted accompanying interviewees, giving an average of 0.9 dogs per interviewee. 2,874 (60%) of dogs were seen off lead by the surveyor during the interview.

4.7   The questionnaire typically took 8 minutes (the median value) to complete.

4.8   There were a total of 1,293 refusals, where a potential interviewee was approached and declined to be interviewed, for example because they were in a hurry. This was broadly equivalent to 1 refusal per 2 hour session (there were 1,200 sessions). The number of refusals per two-hour session ranged

from 0-13, with just 3 sessions with 10 or more refusals. In all cases these involved a group/organised event (for example a running event taking place at Fritham). A total of 560 sessions (43%) had no refusals at all.

4.9 A total of 639 people were approached and had already been interviewed. These were not re-interviewed. The locations with the highest totals for people already interviewed were Racecourse View (37 people), Marchwood Inclosure (36 people) and by the phone box on Woodlands Road (34 people).

4.10 As far as possible, surveys were rescheduled to avoid particularly bad or inclement weather. Overall 948 (79%) of the two-hour sessions were without any rainfall and 184 sessions (15%) involved some rainfall but not continuous during the whole two-hour period. A total of 68 sessions (6%) involved continuous rain. For the winter period 338 sessions (70%) were without any rain, during the spring there were 412 (86%) without rain, and during the summer 240 (83%) were without any rain. No single survey location had all survey sessions in a single season with continuous rain.
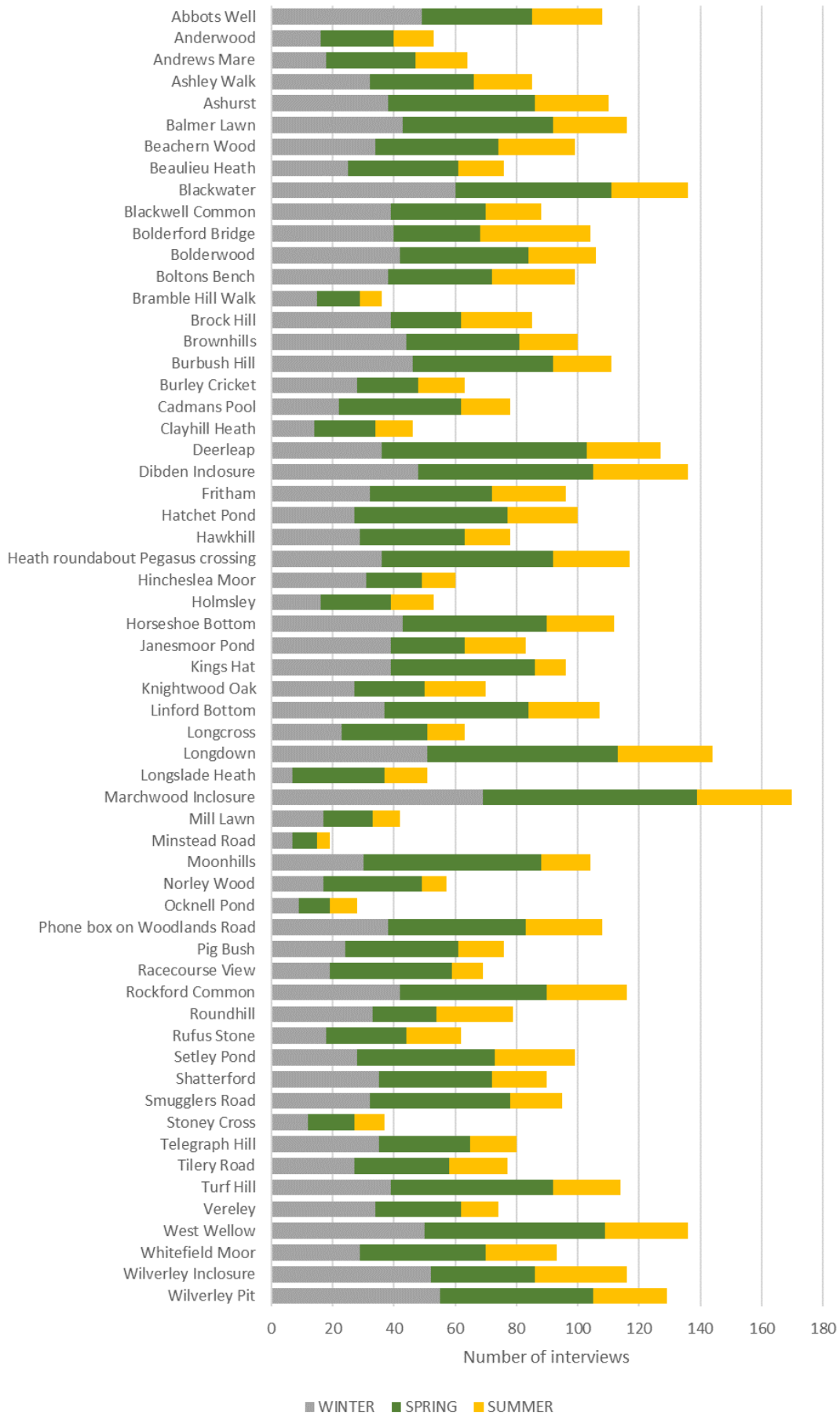
Figure 1: Number of interviews per survey location

Type of visit (Q1)

4.11   The majority (83%) of interviewees were on a short visit directly from home that day. Those staying away from home on holiday accounted for 14% of interviewees and a further 2% were staying with friends or family. 'Other' visit types (37 interviewees in total, 1%) were varied and included those visiting as part of work or during work (10 interviewees) and 2 interviewees who lived in their campervans.

4.12   The relative proportions of different visit types were significantly different across the seasons (x^2_6=91.69, p<0.001). In particular, during the summer there were more holiday makers (22%) and fewer day visitors (76%), compared to the spring (12% and 85% respectively) and the winter (11% and 86% respectively) (Figure 2).

4.13   Locations where tourists (those staying away from home in a second home, mobile home, camping or on holiday) accounted for a high proportion (above a fifth) of interviewees included Beachern Wood (20% of interviewees were tourists), Ocknell Pond (21%), Brock Hill (25%), Burley Cricket (31%), Minstead Road (32%), Blackwater (33%), Whitefield Moor (33%), Tilery Road (36%), Clayhill Heath (39%), Bolderwood (41%), Knightwood Oak (47%), Balmer Lawn (46%) and Bolderford Bridge (62%).
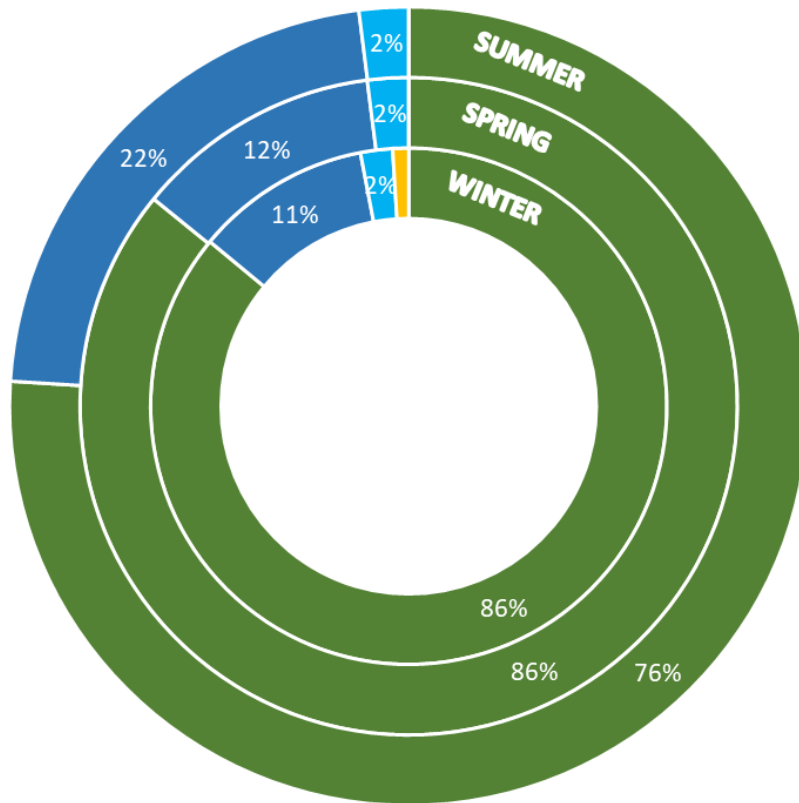
Figure 2: Visit type by season (from Q1).

Activity (Q2)

4.14 The survey involved asking interviewees for a single, main activity they were undertaking that day and then also for any other activities being undertaken by the interviewee or others in their group that day. A wide range of activities were recorded, however for most interviewees the main activity was either dog walking (55%) or walking (26%) (Table 3 and Figure 3). Activities were assigned to predetermined categories within the questionnaire or attributed as 'other' with additional details recorded. These 'other' activities were reviewed and as relevant additional categories were created, these are included in Table 3.

Table 3: Number (%) of interviewees by main activity and season.

Activity	Winter	Spring	Summer	Total
Dog walking/exercising dogs	1,164 (60)	1,234 (56)	522 (45)	2,920 (55)
Walking	499 (26)	570 (26)	338 (29)	1,407 (26)
Cycling off-road/mountain biking	73 (4)	127 (6)	83 (7)	283 (5)
Enjoying the view/picnic	10 (1)	52 (2)	61 (5)	123 (2)
Running	35 (2)	46 (2)	17 (1)	98 (2)
Bird/Wildlife watching	29 (1)	37 (2)	18 (2)	84 (2)
Photography	7 (0)	10 (0)	22 (2)	39 (1)
Family outing (inc kids playing)	18 (1)	16 (1)	5 (0)	39 (1)
Horse Riding	8 (0)	10 (0)	14 (1)	32 (1)
Commercial dog walking	10 (1)	9 (0)	8 (1)	27 (1)
Visiting cafe/pub	9 (0)	12 (1)	(0)	21 (0)
Golf	5 (0)	13 (1)	2 (0)	20 (0)
Road cycling	3 (0)	5 (0)	9 (1)	17 (0)
Meeting up with friends	1 (0)	8 (0)	6 (1)	15 (0)
Model aircraft	4 (0)	4 (0)	2 (0)	10 (0)
Foraging[6]	5 (0)	1 (0)	(0)	6 (0)
Duke of Edinburgh	2 (0)	5 (0)	(0)	7 (0)
Other	72 (4)	56 (3)	50 (4)	178 (3)
Total	**1,955 (100)**	**2,215 (100)**	**1,157 (100)**	**5,326 (100)**
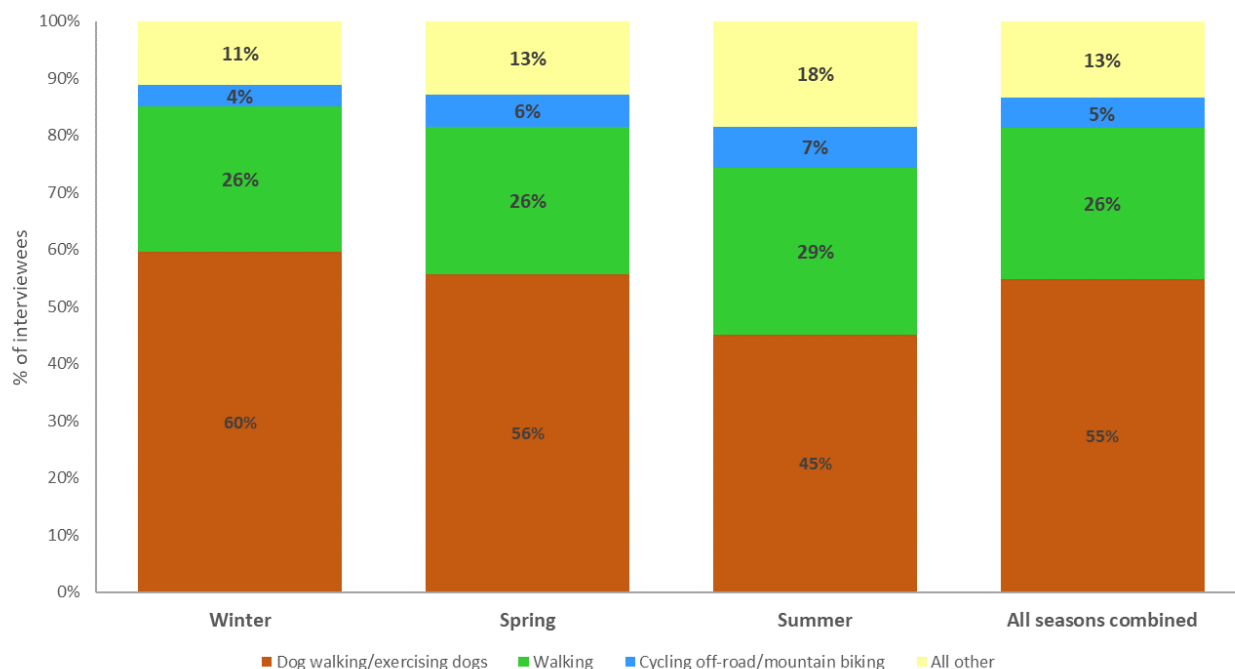
Figure 3: Breakdown of activity types by season

[6] 'Foraging' includes those people on a fungi foray and also those collecting sweet chestnuts, wood or similar.

4.15 The relative proportion of those whose main activity was dog walking, walking, cycling (off-road and road) or all other activities combined was significantly different between the three seasons (X^2_6=80.05, p<0.001). The differences were primarily in the summer, when dog walkers made up a lower proportion of interviewees while those cycling and undertaking all other activities were more frequent.

4.16 The variation in activity types across survey points are summarised in Map 3, with interviewees grouped by main activity (dog walking, walking, cycling (off-road and road) or all other activities combined). The map shows that dog walking was very much focussed around the peripheral areas of the SPA/SAC, while walking (without a dog) was the most common main activity at the more central survey locations. Cyclists were interviewed at scattered locations but notably those around Brockenhurst and also at Burbush Hill. Roundhill was the only location where an activity beside dog walking or walking was the most frequently given main activity, and here it was golf that was the main activity for many (47%) interviewees.

4.17 All activities recorded are summarised in Figure 4, which shows both the % of interviewees who gave a particular activity as either a single 'main' activity or as a secondary activity. The inclusion of the secondary activities little alters the relative frequency with which different activities were recorded. However, there were five activities that were more frequently given as secondary activities and therefore are perhaps more ancillary, these were: enjoying the view/picnic, bird/wildlife watching, photography, visiting café/pub and meeting up with friends.

4.18 Those who selected a secondary activity were most commonly those visiting café/pub (75% giving a secondary activity), followed by those meeting up with friends (53%). Golfers were the only interviewed group in which no interviewees gave a secondary activity.
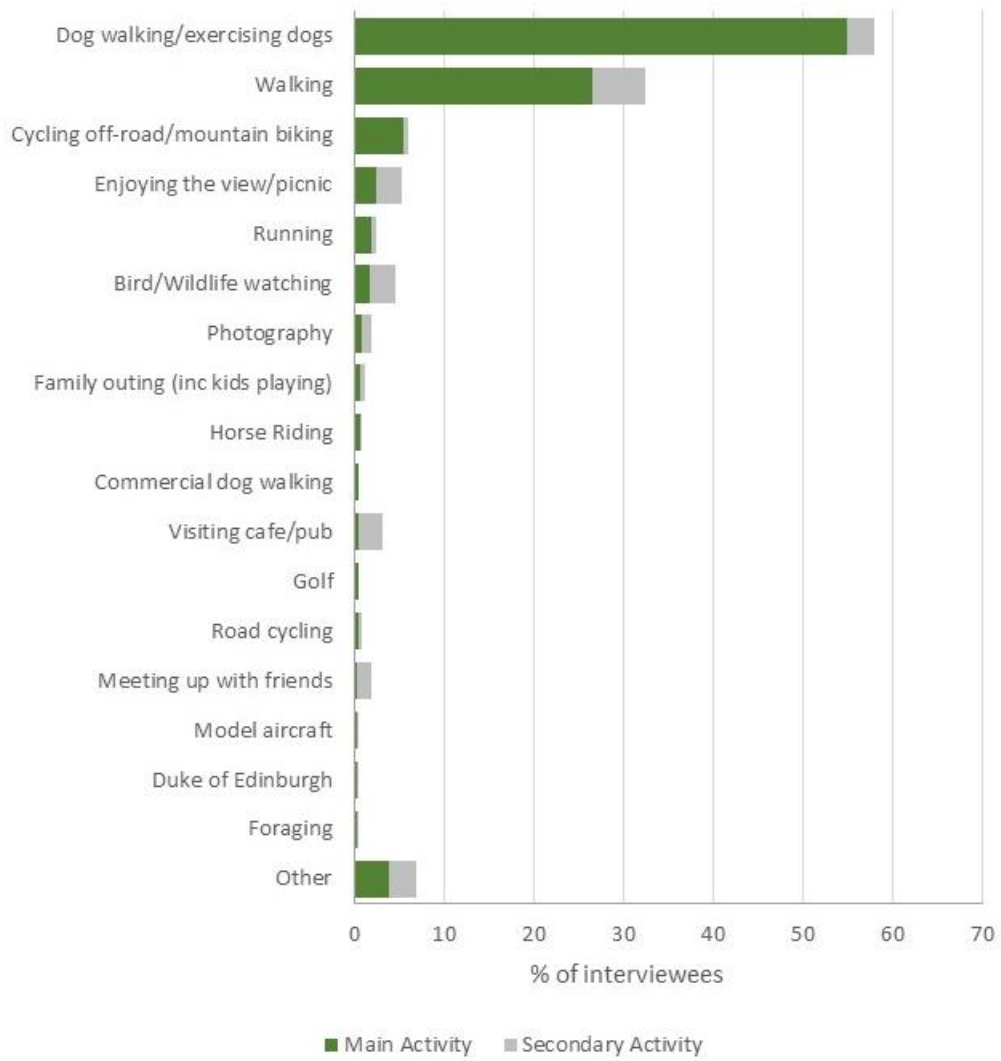
Figure 4: Main and secondary activities (from Q2)

Map 3:Number of interviewees by main activity
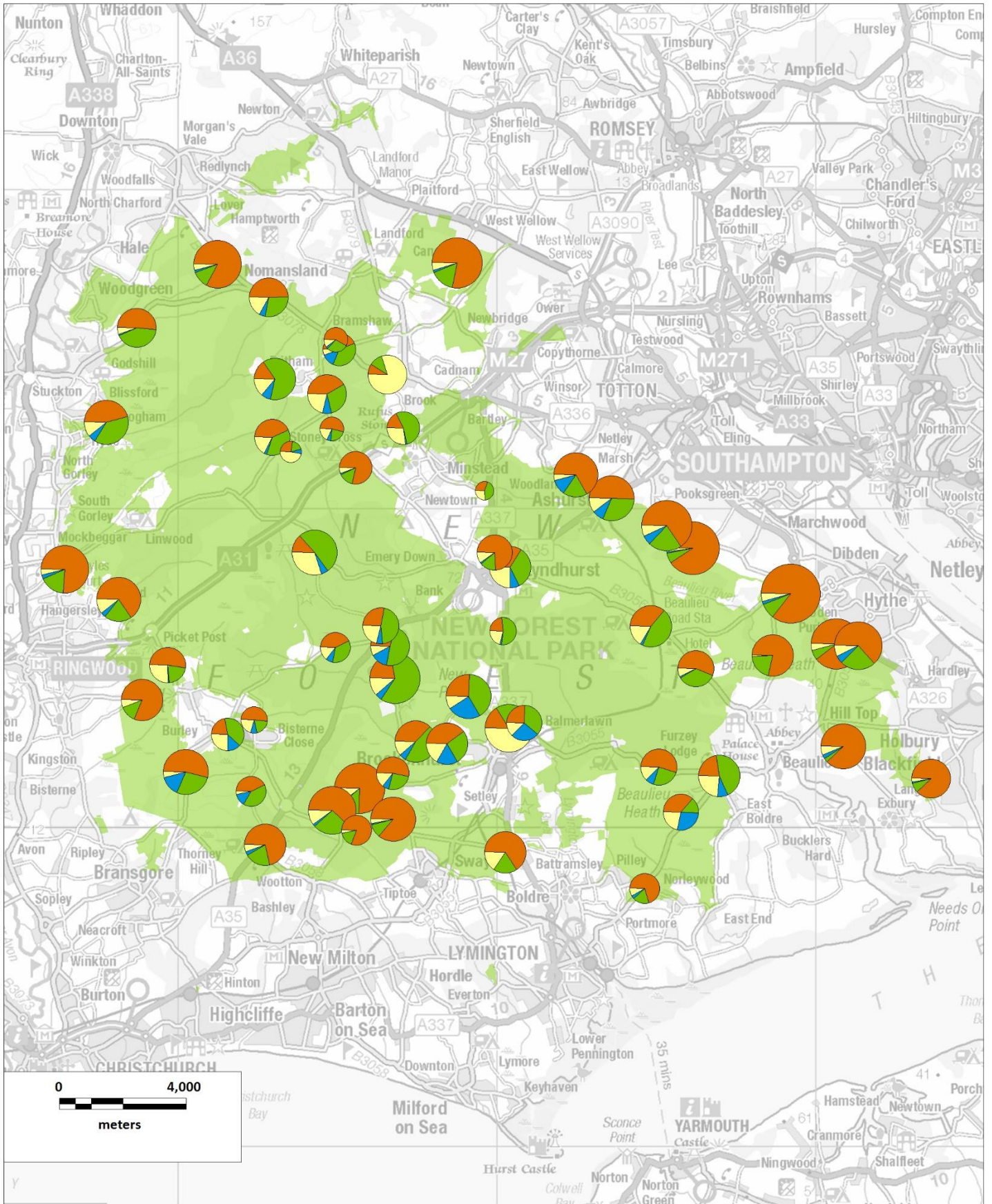
New Forest SPA/SAC

Interviewees by activity type

170
85
17

Dog walking / exercising dogs Cycling
Walking Other

Note: Following site locations slightly offset to make pies more visible: Hinchelsea Moor, Wilverley Inc, Longslade Hill, Ocknell Pond & Heath Roundabout
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Frequency of visit (Q3)

4.19   Around a quarter (26%) of interviewees indicated that over the previous year they had tended to visit the New Forest woodland and heathland on a daily basis, with 1 to 3 times per week the next most common visit frequency (given by 18% of interviewees) (Table 4). Dog walkers were notable in being the most regular visitors, with 41% of dog walkers interviewed indicating they visited on a daily basis and a further 14% of dog walkers indicating they visited more than once per day. Over half (57%) of the commercial dog walkers visited more than once per day.

4.20   Aside from those walking dogs, for many activities 1 to 3 times per week was the most common visit frequency (18% of all interviewees). Frequency data are shown in Map 4. It can be seen that the interview locations around the periphery of the New Forest SPA/SAC tend to have the highest proportion of regular visitors.

4.21   We assigned an approximate number of visits to the categories in the questionnaire – so for example we estimated someone who visits more than once a day might tend to make around 400 visits over a year. Using these values we could estimate roughly how many annual visits were typically made by interviewees. Across all interviewees we estimate the typical number of visits per year to be 166. The number of visits per year for each activity are summarised in the final column in Table 4 and graphically in Figure 5. It can be seen that commercial dog walking, dog walking, horse riding, running and golf are the main activities that stand out as involving regular or frequent access.

Table 4: Numbers of interviewees (%) and frequency of visit (from Q3) by main activity type. Grey shading reflects the top two values in each row (darker grey shading indicating the higher value). Each frequency category was assigned a single approximate value (top row), and these values used to estimate the typical average number of visits per year, per activity type (the final column).

Main Activity	More than once a day	Daily	Most days	1 to 3 times a week	2 to 3 times per month	Once a month	Less than once a month	First visit	Don't know/blank	Total	Ave. visits per year per interviewee
Visits per year (approx.)	400	332	240	110	12	10	4	1	0		
Dog walking/exercising dogs	407 (14)	1205 (41)	400 (14)	451 (15)	116 (4)	113 (4)	121 (4)	104 (4)	3 (0)	2920 (100)	244
Walking	14 (1)	108 (8)	52 (4)	305 (22)	165 (12)	161 (11)	298 (21)	302 (21)	2 (0)	1407 (100)	66
Cycling off-road/mtn. biking	0 (0)	21 (7)	19 (7)	58 (20)	23 (8)	36 (13)	61 (22)	63 (22)	2 (1)	283 (100)	67
Enjoying the view/picnic	1 (1)	5 (4)	2 (2)	10 (8)	10 (8)	16 (13)	35 (28)	44 (36)	0 (0)	123 (100)	33
Running	2 (2)	13 (13)	21 (21)	37 (38)	10 (10)	8 (8)	6 (6)	1 (1)	0 (0)	98 (100)	147
Bird/Wildlife watching	1 (1)	4 (5)	3 (4)	15 (18)	11 (13)	8 (10)	17 (20)	25 (30)	0 (0)	84 (100)	52
Photography	1 (3)	2 (5)	3 (8)	5 (13)	6 (15)	9 (23)	7 (18)	6 (15)	0 (0)	39 (100)	65
Family outing (inc kids playing)	0 (0)	2 (6)	1 (3)	4 (13)	2 (6)	8 (25)	11 (34)	4 (13)	0 (0)	32 (100)	47
Horse Riding	0 (0)	7 (27)	7 (27)	9 (35)	0 (0)	1 (4)	0 (0)	1 (4)	1 (4)	26 (100)	193
Commercial dog walking	12 (57)	2 (10)	5 (24)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	21 (100)	328
Visiting cafe/pub	0 (0)	1 (5)	0 (0)	5 (25)	2 (10)	4 (20)	4 (20)	4 (20)	0 (0)	20 (100)	48
Golf	0 (0)	3 (17)	2 (11)	8 (44)	0 (0)	4 (22)	0 (0)	1 (6)	0 (0)	18 (100)	133
Road cycling	0 (0)	0 (0)	0 (0)	6 (35)	2 (12)	4 (24)	1 (6)	4 (24)	0 (0)	17 (100)	43
Meeting up with friends	0 (0)	2 (13)	1 (7)	1 (7)	2 (13)	5 (33)	3 (20)	1 (7)	0 (0)	15 (100)	73
Model aircraft	0 (0)	1 (10)	1 (10)	3 (30)	2 (20)	1 (10)	2 (20)	0 (0)	0 (0)	10 (100)	94
Duke of Edinburgh	0 (0)	0 (0)	1 (14)	1 (14)	0 (0)	2 (29)	2 (29)	1 (14)	0 (0)	7 (100)	54
Foraging	0 (0)	1 (14)	1 (14)	0 (0)	2 (43)	1 (14)	1 (14)	0 (0)	0 (0)	6 (100)	102
Other	2 (1)	18 (9)	16 (8)	51 (26)	21 (11)	11 (6)	40 (20)	41 (21)	0 (0)	200 (100)	84
Total	440 (8)	1395 (26)	535 (10)	971 (18)	374 (7)	392 (7)	609 (11)	602 (11)	6 (0)	5326 (100)	166
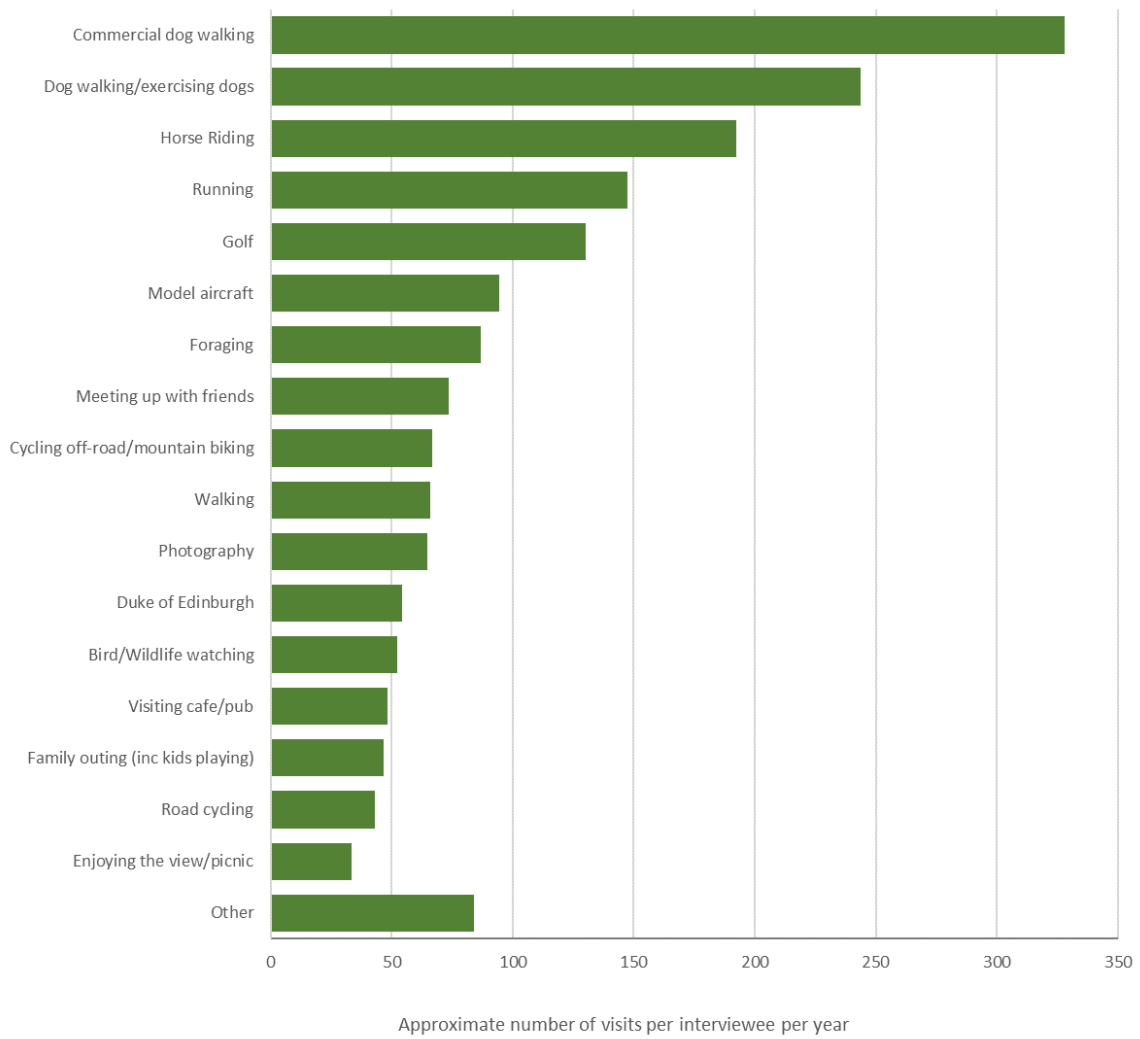
Figure 5: Approximate number of annual visits per interviewee per year, by main activity type

Map 4: Number of interviewees by frequency of visit

Number of interviewees by frequency of visit

150
75
15
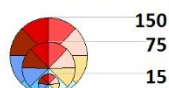
■ More than once a day	■ 1 to 3 times a week
■ Daily	■ 2 to 3 times per month
■ Most_days	■ Once a month

■ Less than once a month
■ First visit/don't know

■ New Forest SPA/SAC

Note: Following site locations slightly offset to make pies more visible: Hinchelsea Moor, Wilverley Inc, Longslade Hill, Ocknell Pond & Heath Roundabout
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Visit duration (Q4)

4.22   Visit duration is summarised by activity in Table 5. Visits typically lasted between 30 minutes and an hour (35% of interviewees) and between 1 and 2 hours (34%).

4.23   We assigned an approximate duration to the categories in the questionnaire – so for example we estimated someone who visited for 1 – 2 hours to have a visit of 90 minutes. Using these values, we estimated an approximate typical visit duration. Across all interviewees we estimated this to be 95 minutes. Visit duration values for each activity are summarised in the final column in Table 5 and graphically in Figure 6. It can be seen that those undertaking Duke of Edinburgh and golf clearly have the longest visits while dog walking and running are activities which involved interviewees having relatively short visits.
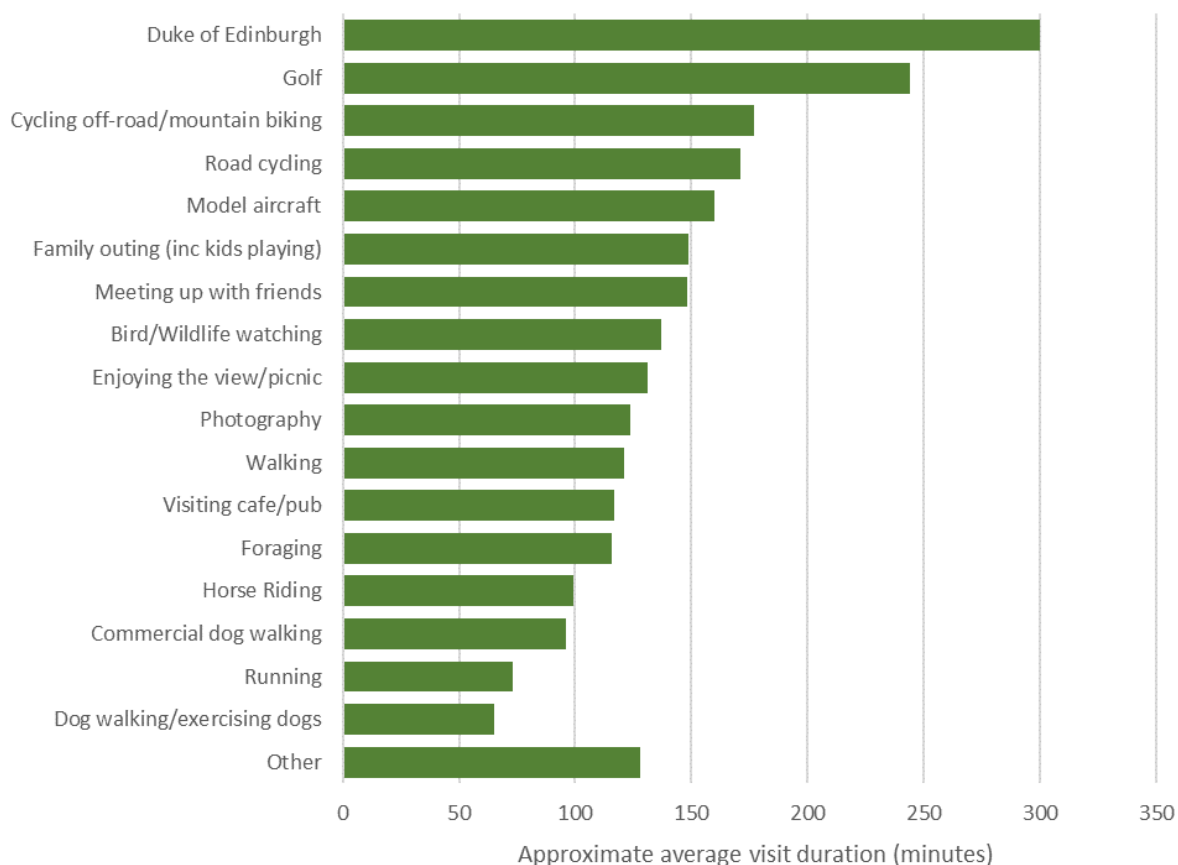
Figure 6: Approximate average visit duration, by main activity type

Table 5: Numbers (%) of interviewees and visit duration (from Q4) by main activity type. Grey shading reflects the top two values in each row (darker grey shading indicating the higher value). Each frequency category was assigned a single approximate value (top row), and these values used to estimate the typical visit duration, per activity type (the final column).

Main activity	Less than 30 minutes	Between 30 minutes and 1 hour	1-2 hours	2-3 hours	3-4 hours	4 hours +	No response/ Don't know	Total	Ave. visit duration (mins, approx).
Single value (mins, approx.)	20	45	90	150	210	300			
Dog walking/exercising dogs	374 (13)	1,406 (48)	966 (33)	111 (4)	29 (1)	31 (1)	3 (0)	2,920 (100)	65
Walking	80 (6)	287 (20)	537 (38)	211 (15)	125 (9)	167 (12)	0 (0)	1,407 (100)	121
Cycling off-road/mountain biking	3 (1)	16 (6)	77 (27)	68 (24)	40 (14)	79 (28)	0 (0)	283 (100)	177
Enjoying the view/picnic	16 (13)	19 (15)	39 (32)	13 (11)	11 (9)	24 (20)	1 (1)	123 (100)	131
Running	9 (9)	42 (43)	39 (40)	4 (4)	2 (2)	2 (2)	0 (0)	98 (100)	73
Bird/Wildlife watching	5 (6)	17 (20)	25 (30)	9 (11)	12 (14)	15 (18)	1 (1)	84 (100)	137
Photography	3 (8)	7 (18)	14 (36)	8 (21)	1 (3)	6 (15)	0 (0)	39 (100)	124
Golf	0 (0)	1 (3)	2 (5)	4 (10)	10 (26)	22 (56)	0 (0)	39 (100)	244
Family outing (inc kids playing)	2 (6)	5 (16)	8 (25)	7 (22)	3 (9)	7 (22)	0 (0)	32 (100)	149
Horse Riding	0 (0)	6 (22)	16 (59)	3 (11)	1 (4)	1 (4)	0 (0)	27 (100)	99
Commercial dog walking	0 (0)	9 (43)	8 (38)	2 (10)	0 (0)	2 (10)	0 (0)	21 (100)	96
Visiting cafe/pub	4 (20)	2 (10)	7 (35)	2 (10)	3 (15)	2 (10)	0 (0)	20 (100)	117
Road cycling	0 (0)	0 (0)	6 (35)	5 (29)	2 (12)	4 (24)	0 (0)	17 (100)	171
Meeting up with friends	4 (27)	1 (7)	3 (20)	0 (0)	3 (20)	4 (27)	0 (0)	15 (100)	148
Model aircraft	1 (10)	1 (10)	3 (30)	1 (10)	1 (10)	3 (30)	0 (0)	10 (100)	160
Duke of Edinburgh	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (100)	0 (0)	7 (100)	120
Foraging	0 (0)	0 (0)	4 (57)	1 (17)	1 (17)	0 (0)	0 (0)	6 (100)	116
Other	35 (20)	29 (16)	42 (24)	19 (11)	16 (9)	36 (20)	1 (1)	178 (100)	128
Total	**536 (10)**	**1,848 (35)**	**1,796 (34)**	**468 (9)**	**260 (5)**	**412 (8)**	**6 (0)**	**5,326 (100)**	**95**

Time of year (Q5)

4.24   The majority (64%) of interviewees stated they visited equally all year round and did not tend to visit at a particular time of year (Table 6). Visiting equally all year round, was the most common response across most activity types, however where interviewees did indicate a season, summer was the most common (13% of interviewees tended to visit more in the summer). Photography and foraging were two activities where a notable proportion visited outside the summer, with 23% of interviewed photographers and 71% of foragers tending to visit more in the autumn.

Table 6: Numbers (%) of interviewees by main activity and time of year they tend to visit (from Q5). Grey shading reflects the top two values in each row, excluding the don't know/first visit column (darker grey shading indicating the higher value). Note that interviewees could give multiple responses and therefore the percentages do not necessarily add to 100.

Main Activity	Equally all year	Spring (Mar-May)	Summer (Jun-Aug)	Autumn (Sept-Nov)	Winter (Dec-Feb)	Don't know/first visit	Total interviewees
Dog walking/exercising dogs	2301 (79)	199 (7)	251 (9)	175 (6)	167 (6)	180 (6)	2920 (100)
Walking	653 (46)	184 (13)	243 (17)	174 (12)	66 (5)	382 (27)	1407 (100)
Cycling off-road/mountain biking	113 (40)	44 (16)	71 (25)	33 (12)	8 (3)	73 (26)	283 (100)
Enjoying the view/picnic	39 (32)	16 (13)	32 (26)	9 (7)	2 (2)	48 (39)	123 (100)
Running	72 (73)	15 (15)	14 (14)	7 (7)	5 (5)	2 (2)	98 (100)
Bird/Wildlife watching	36 (43)	13 (15)	15 (18)	8 (10)	1 (1)	24 (29)	84 (100)
Photography	21 (54)	4 (10)	2 (5)	9 (23)	1 (3)	8 (21)	39 (100)
Golf	23 (59)	3 (8)	15 (38)	4 (10)	0 (0)	2 (5)	39 (100)
Family outing (inc kids playing)	12 (38)	5 (16)	13 (41)	2 (6)	0 (0)	6 (19)	32 (100)
Horse Riding	23 (85)	1 (4)	1 (4)	1 (4)	2 (8)	1 (4)	27 (100)
Commercial dog walking	18 (86)	2 (10)	2 (10)	2 (10)	1 (5)	0 (0)	21 (100)
Visiting cafe/pub	8 (40)	7 (35)	7 (35)	6 (30)	1 (5)	3 (15)	20 (100)
Road cycling	8 (47)	2 (12)	4 (24)	2 (12)	1 (6)	4 (24)	17 (100)
Meeting up with friends	9 (60)	3 (20)	4 (27)	2 (13)	1 (7)	1 (7)	15 (100)
Model aircraft	5 (50)	2 (20)	4 (40)	1 (10)	(0)	1 (10)	10 (100)
Duke of Edinburgh	2 (29)	3 (43)	2 (29)	1 (14)	1 (14)	1 (14)	7 (100)
Foraging	2 (33)	1 (17)	1 (17)	4 (67)	2 (29)	0 (0)	6 (100)
Other	82 (46)	20 (11)	34 (19)	13 (7)	8 (4)	50 (28)	178 (100)
Total	**3427 (64)**	**525 (10)**	**715 (13)**	**454 (9)**	**267 (5)**	**786 (15)**	**5326 (100)**

4.25   Relatively few (19%) interviewees in the summer stated they tended to visit equally all year round compared to interviews at other times of year (39% visiting all year round in the winter, 42% in the spring).

Transport (Q6)

4.26   Virtually all interviewees (90%) had arrived by car/van or other motor vehicle[7] (Table 7). Dog walkers, walkers and runners were the only activity types where any notable proportion of interviewees had arrived on foot. Some cyclists had travelled by bicycle to the New Forest that day, but otherwise most (70% of mountain bikers and 76% of road cyclists) had travelled by car/van and brought their bicycle with them. Around a fifth (27%) of horse riders had arrived at the interview location on horseback.

Table 7: Number (%) of interviewees by main activity and mode of transport (from Q6). Grey shading reflects the top two values in each row (darker grey shading indicating the higher value). Note that interviewees could give multiple responses and therefore the percentages do not necessarily add to 100. 'Other' transport types were horse and mobility scooter.

Main Activity	Car / van	On foot	Bicycle	Train	Bus	Other	Total interviewees
Dog walking/exercising dogs	2679 (92)	236 (8)	5 (0)	1 (0)	1 (0)	1 (0)	2920 (100)
Walking	1244 (88)	160 (11)	3 (0)	7 (0)	0 (0)	2 (0)	1407 (100)
Cycling off-road/mountain biking	197 (70)	3 (1)	86 (30)	1 (0)	0 (0)	0 (0)	283 (100)
Enjoying the view/picnic	118 (96)	2 (2)	2 (2)	1 (1)	0 (0)	0 (0)	123 (100)
Running	75 (77)	23 (23)	1 (1)	0 (0)	0 (0)	0 (0)	98 (100)
Bird/Wildlife watching	80 (95)	1 (1)	0 (0)	0 (0)	3 (4)	0 (0)	84 (100)
Photography	38 (97)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	39 (100)
Golf	38 (97)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	39 (100)
Family outing (inc kids playing)	29 (91)	2 (6)	1 (3)	0 (0)	0 (0)	0 (0)	32 (100)
Horse riding	17 (65)	0 (0)	2 (8)	0 (0)	0 (0)	8 (27)	27 (100)
Commercial dog walking	21 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	21 (100)
Visiting cafe/pub	19 (95)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	20 (100)
Road cycling	13 (76)	0 (0)	4 (24)	0 (0)	0 (0)	0 (0)	17 (100)
Meeting up with friends	15 (100)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	15 (100)
Model aircraft	10 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)
Duke of Edinburgh	7 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (100)
Foraging	6 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (100)
Other	167 (93)	5 (3)	2 (1)	2 (1)	0 (0)	0 (0)	178 (100)
Total	**4773 (90)**	**436 (8)**	**106 (2)**	**12 (0)**	**4 (0)**	**11 (0)**	**5326 (100)**

[7] All motor vehicles were included in this category – including horse boxes, motor homes, campervans, motorbikes etc. The only exception was mobility scooters which are included under 'other'

Reasons for site choice (Q7)

4.27   Interviewees gave a wide range of reasons as to why they had chosen to visit the specific location where interviewed, as opposed to other parts of the New Forest. Interviewees typically cited a range of reasons, for example sites could be favourite locations within easy access from home and with good parking. Responses were coded as part of the survey and free text responses also recorded. Free text responses were reviewed and categorised and key reasons are summarised in Figure 7. It can be seen that close to home (or work or holiday accommodation) was the most common response, given by a quarter of interviewees (25%). The second most frequent response (16% of interviewees) related to previous knowledge or familiarity (for example it was the interviewee's 'favourite' walk, 'preferred' route or there was a sentimental connection with the location). Travel routing was also important, with many (10%) citing that they had stopped because the location was en route (to the shops, to friends, to the garage etc.) or even just stopping at random (2% interviewees). A few interviewees (1%) had been deflected from other locations because they were full or because the car park was shut.
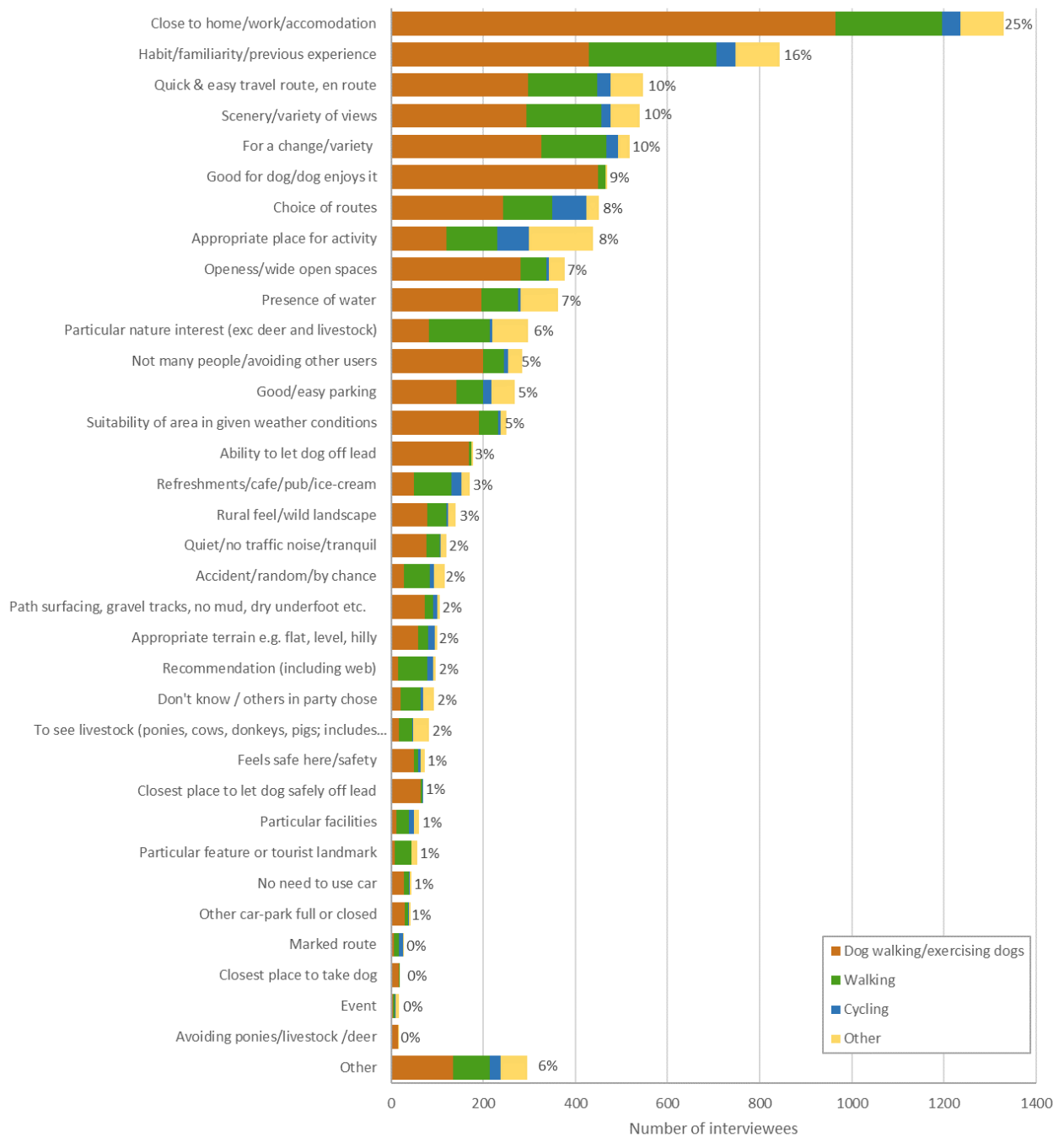
Figure 7: Reasons for site choice (from Q7) by activity. Percentage figures on the graph indicate overall total (all interviewees).

Visitor Routes (Q8-9)

4.28   Most (57%) of interviewees indicated their route on the day interviewed reflected their usual route. In addition, 10% of interviewees didn't have a typical visit and a further 10% were on their first visit. Out of all interviewees, 19% indicated their route was shorter than normal and 2% indicated it was longer than normal.

4.29   Route data were plotted for 5,136 interviews[8], and in total involved 210,000 nodes (i.e. 'clicks of the mouse') to plot. Data are shown for all interviews in Map 5. In Map 6 route data are shown as a heat map on a grid (100m cells) with different maps for dog walking, walking and all cycling (the three main activity groups). The grid is clipped to the SPA/SAC and therefore shows the relative intensity of use (by the interviewed visitors) within the European site. It is important to note when viewing the maps that the interview data relate to specific access points and not all access points were surveyed, as such the data as plotted do not show use across the New Forest woods and heaths as a whole – just the use from the surveyed locations. Nonetheless it is clear that the visitors at the surveyed locations cover a wide area and that the main activities plotted all overlap in space. The map for cyclists tends to show the most concentration along main tracks and routes, and for example around 63% of the total route lengths mapped for those undertaking mountain biking/off-road cycling was on the promoted cycle routes.

4.30   It can be seen that there are some differences in Map 6 between the different activities. Dog walking tends to be concentrated in space more than the other activities with relatively high concentrations of use at many car parks but with use discrete to particular survey points. For walkers there are a few key routes that are clearly well trodden, in particular the Tall Trees route between Brock Hill and Blackwater and the east-west route from Abbott's Well to Fritham. The map for cyclists shows use focussed more along particular routes (e.g. the cycle track from Beachern Wood to Bank, and the old railway line between Burbush and Wilverley) than the other activities. In the 'Other activities' map the high concentration near Brook relates to golfers at Roundhill.

4.31   There were significant differences in total route lengths between the seasons (Kruskall-Wallis H = 16.92, 2 d.f., p<0.001) with route lengths tending to be shorter in the summer. There were also marked differences between activities (main activity either dog walking, cycling (all cycling), walking or other, Kruskall-Wallis H = 713.28, 3 d.f., p<0.001), with cyclists tending to go much further than the other groups. Looking across season and activity, it can be seen that dog walkers (and to some extent cyclists), interviewed over the summer, tended to have shorter routes (Figure 8).

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[8] Those interviews without a route map were predominantly either interviewees in too much of a hurry or were people who did not know where they were going or where they had been.
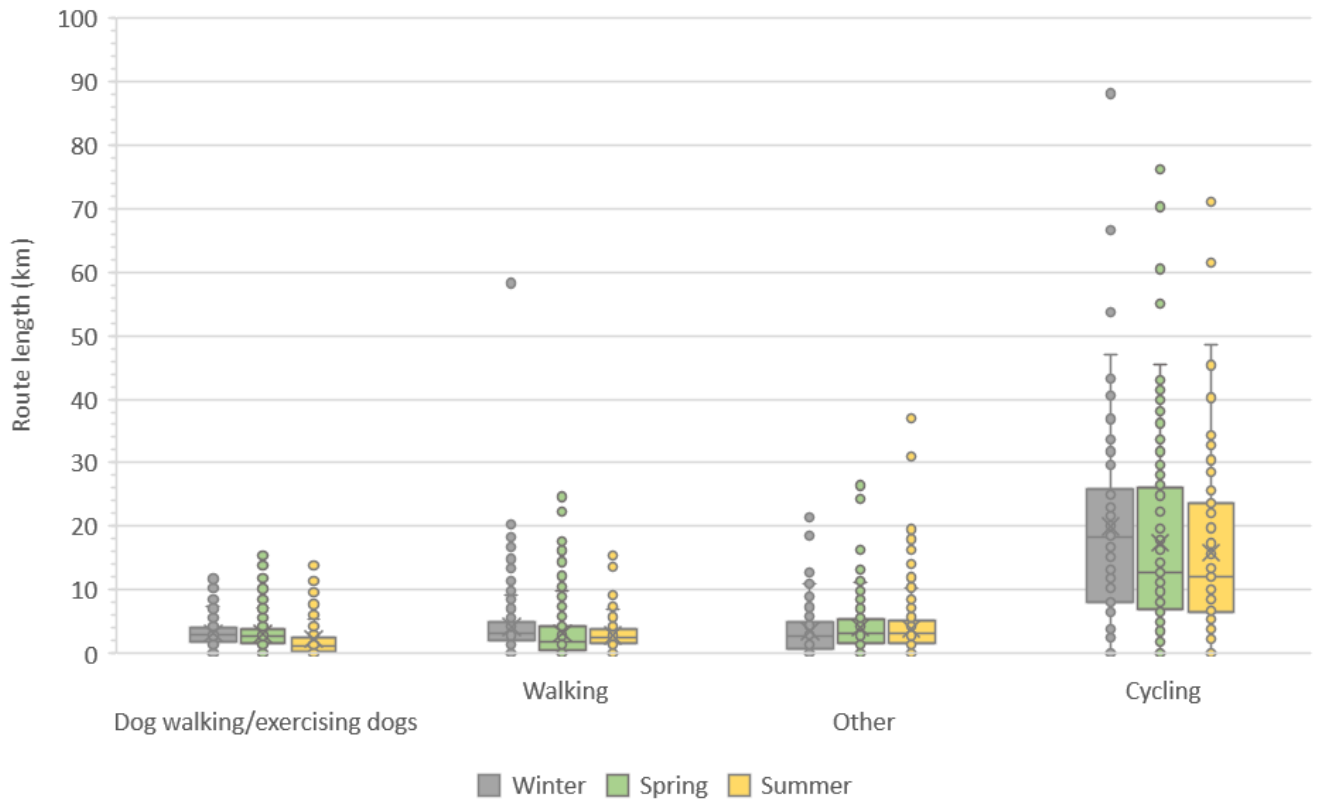
Figure 8: Route lengths by activity and season. Simplified activity types based on main activity and all cyclists grouped together.

4.32   Route data are summarised in Table 8, which gives summary statistics for overall route lengths (as mapped), route lengths solely within the New Forest SPA/SAC and also for penetration distances. Data are summarised by season and by a selection of different main activity types. Taking all interviewees, the typical overall distance covered on their ride/walk was just under 3km (2969m), virtually all of which was within the New Forest SPA/SAC. This kind of distance tended to extend a little under 1km (943m) from the start point (i.e. the penetration distance, how far the route goes from the start point before turning back).

Table 8: Summary of route length metrics by season and selected main activities.

Grouping	N	Overall route length (m)			Route length cut to SPA/SAC (m)			Pentration distance (m)		
		Mean (+SE)	Range	Median	Mean (+SE)	Range	Median	Mean (+SE)	Range	Median
All interviewees	5,136	4,234 (+78)	41-88,140	2,969	3,881 (+58)	41-64,121	2,888	1,210(+19	1-26,633	943
Winter	1,912	4,145 (+120)	123-88,141	3,056	3,832 (+89)	123-50,186	3,012	1,187(+26)	9-13,915	973
Spring	2,111	4,323 (+125)	56-76,281	2,984	3,941 (+95)	56-64,121	2,913	1,256 (+32)	1-26,633	961
Summer	1,113	4,216 (+175)	41-71,082	2,685	3,851 (+134)	41-37,385	2,615	1,165 (+43)	3-16,392	823
Dog walking	2,854	3,073 (+34)	89-15,438	2,787	3,022 (+34)	89-15,371	2,743	1,002 (+12)	3-6,613	922
Walking	1,333	4,227 (+103)	153-58,312	3,290	3,956 (+86)	145-35,548	3,177	1,232 (+29)	1.2-13,915	1,004
Cycling off-road	278	17,562 (+852)	852-88,141	13,735	13,921 (+597)	580-64,121	11,959	3,809 (+207)	17-26,633	2,828
Running	96	6,849 (+421)	1676-24,635	5,749	6,459 (+394)	1676-23,775	5,233	1,928 (+139)	25-8,437	1,603
Bird/wildlife watching	77	2,426 (+235)	133-8,969	1,879	2,376 (+235)	133-8,969	1,670	763 (+72)	30-3,403	663
Horse Riding	26	6,202 (+742)	476-14,192	5,062	5,538 (+633)	476-12,739	5,062	1,438 (+180)	50-3,980	1,267

Map 5: All interviewee routes
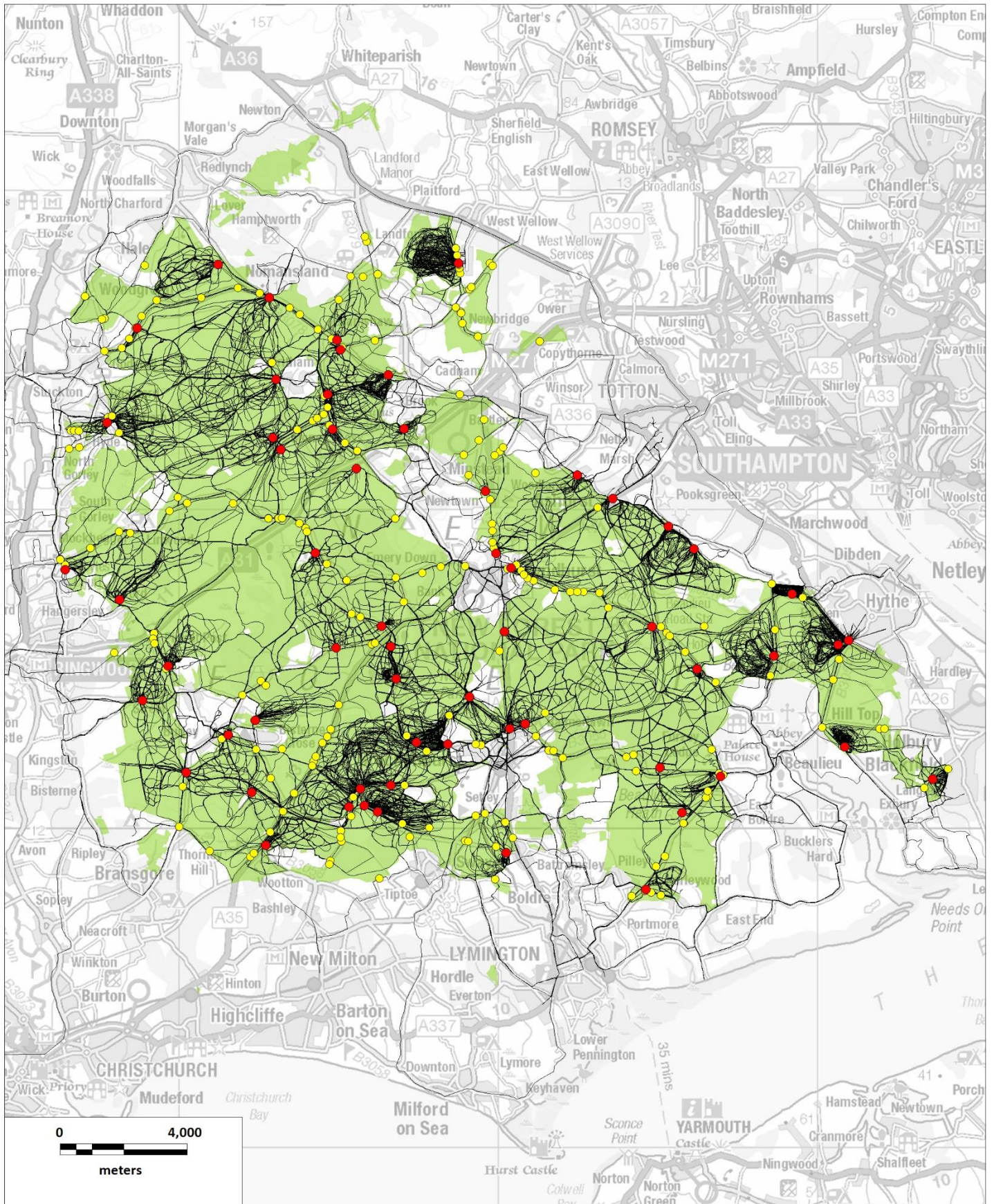
Contains Ordnance Survey Data. © Crown Copyright and Database Right 2019.
Designated site boundaries downloaded from Natural England website. © Natural England.

Map 6: Routes on 100m grid

No. of routes per cell: DOG WALKERS

36 to 150	16 to 20
32 to 36	12 to 16
28 to 32	8 to 12
24 to 28	4 to 8
20 to 24	1 to 4

No. of routes per cell: WALKERS

18 to 150	8 to 10
16 to 18	6 to 8
14 to 16	4 to 6
12 to 14	2 to 4
10 to 12	1 to 2

No. routes per cell: OTHER ACTIVITIES

18 to 150	8 to 10
16 to 18	6 to 8
14 to 16	4 to 6
12 to 14	2 to 4
10 to 12	1 to 2

No. of routes per cell: CYCLISTS

18 to 150	8 to 10
16 to 18	6 to 8
14 to 16	4 to 6
12 to 14	2 to 4
10 to 12	1 to 2

0   4,000

meters

New Forest SPA/SAC

Survey points

4.33   Interviewees gave a variety of different reasons as to what had influenced their route that day. Responses were coded as part of the survey and free text responses/further details were also recorded. Free text responses were reviewed and categorised and key factors are summarised in Figure 7.

4.34   Previous knowledge of the location was the most common response (22% of interviewees), for example people following a favourite route, habitual route etc. Other factors included time available (13%), weather conditions (such as shade or shelter etc.,12%), following a marked trail or the paths available (12%) and activity specific factors (such as where the buggy could go, golf course etc., also 12%). For 3% of interviewees the route was random while a further 3% were influenced by the dog, for example following the dog.

4.35   Differences between seasons were slight. However, avoiding muddy paths/tracks was a factor for just 2% of those interviewed in the summer (compared to 7% in the spring and 8% in the winter) while the a viewpoint or feature (such as the Knightwood Oak) was more frequently cited in the summer (9% of interviewees) compared to the winter and spring (5% of interviewees for both).
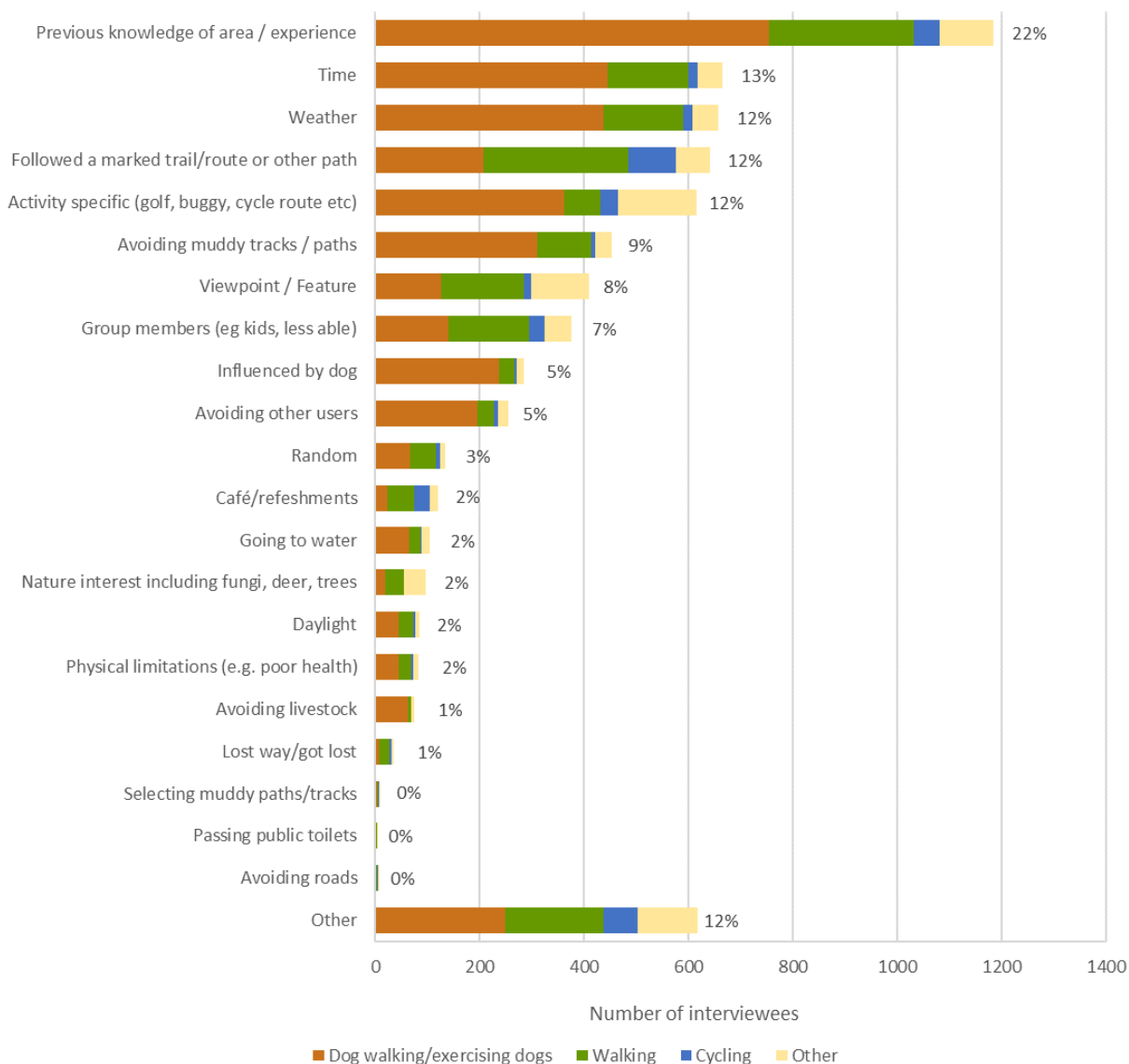
Figure 9: Factors that influenced choice of route (from Q9) by activity. Percentage figures on the graph indicate overall total (all interviewees).

Information used to plan visit (Q10-Q15)

4.36   Maps were the most commonly cited type of information used to plan interviewee's visits (Table 9), with 15% of interviewees using maps. In addition, many interviewees cited map-based websites and apps as important sources. Looking across activities, few dog walkers used information sources to plan their visit compared to other visitors and none of the commercial dog walkers interviewed had used any information sources in their visit planning. Of the websites specifically mentioned, we checked Strava as this can generate similar route data to the data shown in Map 6. Among those off road cycling/ mountain biking just 3% (9

interviewees) stated they used the Strava app and none of the 17 road cyclists that were interviewed had used it. Strava was slightly higher among runners, 6% (6 interviewees).

Table 9: Number (%) of interviewees and information sources used to plan visit (from Q10). Pale grey shading indicates cell values of 10% or more and dark grey indicates values of 25% or more. Sources in bottom row are the more common responses with percentage derived from total using that source type.

Activity	Website	Social media	Smartphone app	Maps	Leaflets	Recommendation from friends or family	Recommedations from a visitor centre or information centre	Total
Dog walking/exercising dogs	75 (3%)	23 (1%)	86 (3%)	177 (6%)	27 (1%)	119 (4%)	13 (0%)	2920 (100%)
Walking	196 (14%)	26 (2%)	139 (10%)	404 (29%)	96 (7%)	149 (11%)	28 (2%)	1407 (100%)
Cycling off-road/mountain biking	58 (20%)	4 (1%)	41 (14%)	105 (37%)	43 (15%)	24 (8%)	6 (2%)	283 (100%)
Enjoying the view/picnic	15 (12%)	3 (2%)	5 (4%)	20 (16%)	4 (3%)	12 (10%)	3 (2%)	123 (100%)
Running	0 (0%)	1 (1%)	15 (15%)	10 (10%)	0 (0%)	4 (4%)	0 (0%)	98 (100%)
Bird/Wildlife watching	17 (20%)	3 (4%)	6 (7%)	17 (20%)	3 (4%)	13 (15%)	2 (2%)	84 (100%)
Photography	9 (23%)	3 (8%)	3 (8%)	13 (33%)	0 (0%)	1 (3%)	0 (0%)	39 (100%)
Golf	2 (5%)	0 (0%)	0 (0%)	2 (5%)	0 (0%)	1 (3%)	0 (0%)	39 (100%)
Family outing (inc kids playing)	2 (6%)	1 (3%)	2 (6%)	5 (16%)	1 (3%)	6 (19%)	0 (0%)	32 (100%)
Horse Riding	1 (4%)	0 (0%)	1 (4%)	2 (7%)	0 (0%)	0 (0%)	0 (0%)	27 (100%)
Commercial dog walking	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	21 (100%)
Visiting cafe/pub	1 (5%)	1 (5%)	3 (15%)	5 (25%)	1 (5%)	1 (5%)	0 (0%)	20 (100%)
Road cycling	2 (12%)	0 (0%)	4 (24%)	9 (53%)	1 (6%)	1 (6%)	0 (0%)	17 (100%)
Meeting up with friends	0 (0%)	0 (0%)	0 (0%)	3 (20%)	0 (0%)	4 (27%)	0 (0%)	15 (100%)
Model aircraft	1 (10%)	0 (0%)	0 (0%)	1 (10%)	0 (0%)	0 (0%)	0 (0%)	10 (100%)
Duke of Edinburgh	0 (0%)	2 (29%)	1 (14%)	6 (86%)	1 (14%)	2 (29%)	0 (0%)	7 (100%)
Foraging	0 (0%)	0 (0%)	0 (0%)	1 (17%)	0 (0%)	1 (17%)	0 (0%)	6 (100%)
Other	29 (16%)	11 (6%)	21 (12%)	36 (20%)	10 (6%)	24 (13%)	4 (2%)	178 (100%)
Total	**408 (8%)**	**78 (1%)**	**327 (6%)**	**816 (15%)**	**187 (4%)**	**362 (7%)**	**56 (1%)**	**5326 (100%)**
Sources	**Thenewforest.co.uk (30%), Forestry Commission/England (15%), National Park website (15%), Other (36%)**	**Facebook (69%), Instagram (17%), Twitter (4%), Other (36%)**	**Google maps (24%), OS map finder/'OS' (11%), Viewranger (7%), New Forest app (5%),**				**Lyndhurst (36%), Lymington (7%), Brockenhurst (4%)**	

Awareness of species vulnerable to recreation impacts (Q16)

4.37   Overall around a fifth of interviewees (22%) indicated that they were not aware of a wildlife habitat or species that could be affected by recreation while around two-thirds (67%) of interviewees were both aware and could name a species or habitat (Figure 10).

Q16: Are you aware of any wildlife habitats or species that could be affected by people coming here? If so, can you name them?
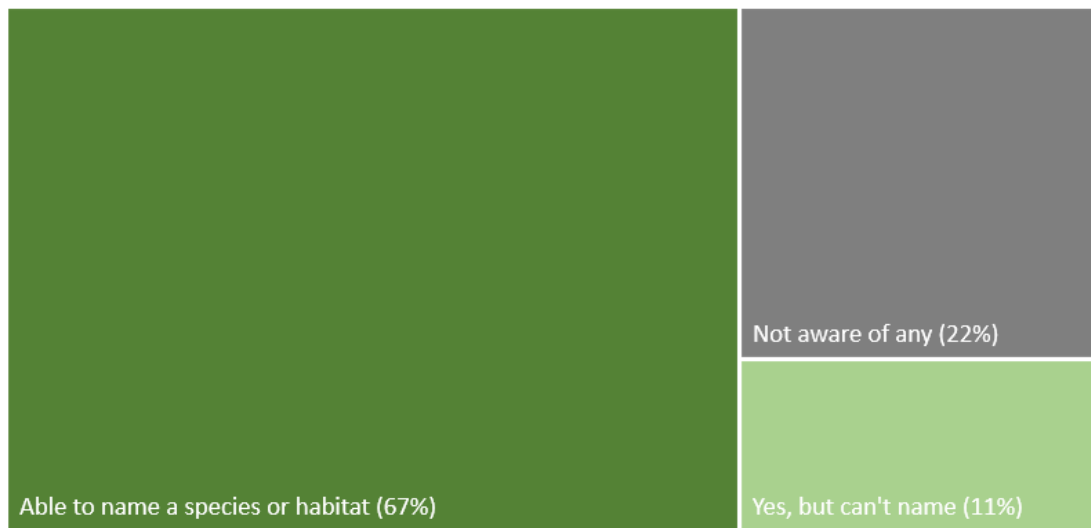
Figure 10: Awareness of nature conservation impacts from recreation (from Q16)

4.38   There was no significant difference in the proportion of interviewees who were aware of habitats/species affected by recreation for dog walkers when comparing those with (18% aware) or without their dogs on-lead (21% aware) during the interview (χ^2_2=2.3, p=0.13).

4.39   Species or habitats named were coded by the surveyor according to pre-determined categories, for example recording whether breeding birds were mentioned or whether a specific species or species group was mentioned. These were not mutually exclusive, with the potential to log multiple responses against individual interviewees. Responses are summarised Figure 11. Breeding birds were the most commonly named concern (40% of interviewees) and this category included responses such as 'ground-nesting birds' or nesting birds in general. Around 2% of all interviewees specifically named heathland breeding birds – Nightjar, Woodlark or Dartford Warbler and around 4% indicated breeding waders (either naming a particular wader species such as Curlew or Lapwing or simply indicating breeding waders in

general). Around a fifth (24%) of interviewees cited deer as vulnerable to recreation impacts and 30% highlighted livestock (either livestock in general or specific mention of cows, pigs, ponies etc.). Other responses (13% of all interviewees), which didn't fit in the pre-determined categories included reptiles (i.e. 'snakes', 'lizards', 'sand lizard' etc; 4% of all interviewees) and mushrooms (1%).
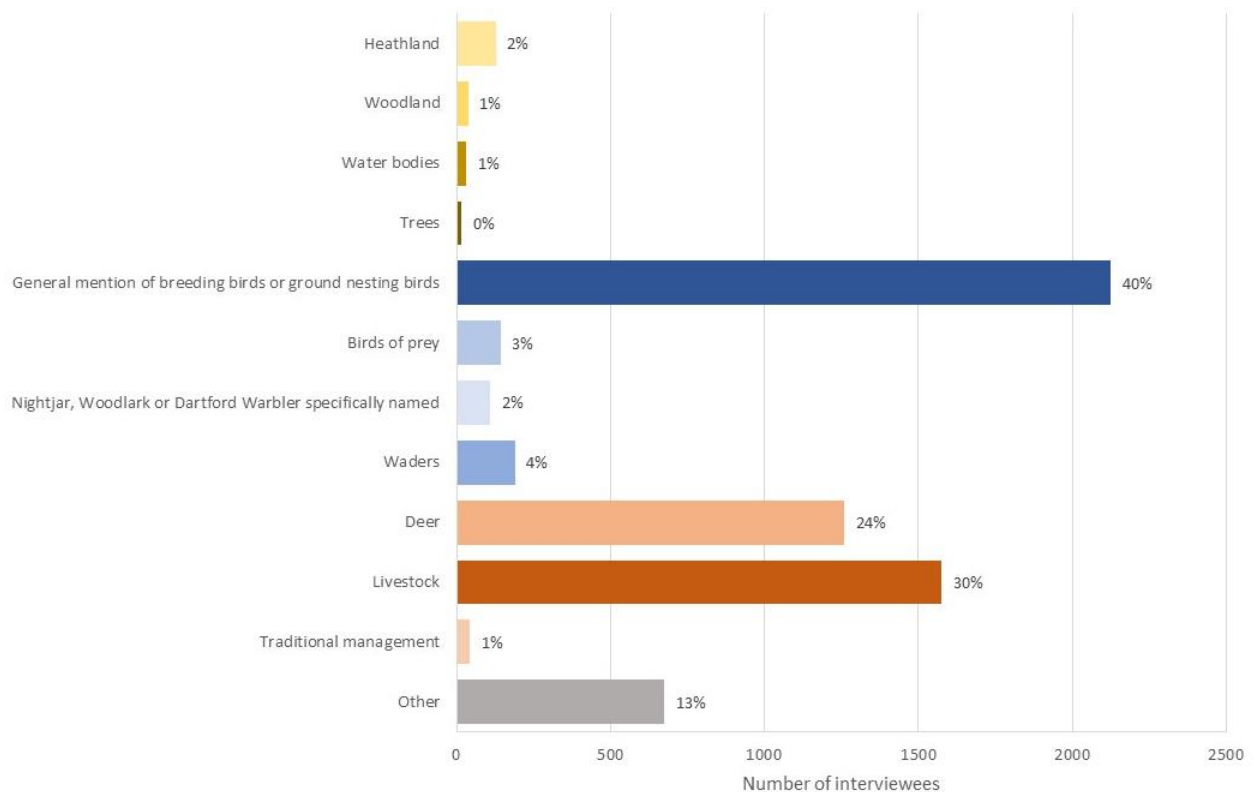
Figure 11: Awareness of wildlife habitats or species that could be affected by people coming to the New Forest (from Q16). Data labels give the percentage of all interviewees. Groups are not mutually exclusive, as multiple habitats or species could be given.

Visits to other sites (Q17-Q18)

4.40   Most (4,434 interviewees, 83%) stated that they were on a short visit or day trip, travelling directly from home that day. These visitors are essentially those who are not on holiday and therefore more likely to live relatively close to the New Forest. This subset of interviewees were asked to indicate an approximate percentage of their weekly visits (for the given activity) they undertook within the New Forest woodland and heathland. Most (41%) of these interviewees indicated that all their visits for their chosen activity took place within the New Forest heathland and woodland, while a further 27% indicated at least 75% of their visits were to the New Forest woodland and

heathland. In total therefore, around two-thirds (68%) of day visitors to the New Forest choose the New Forest above other locations virtually all of the time.

4.41   Data are summarised by activity in Figure 12. It can be seen that horse riders use the New Forest almost exclusively, with 73% indicating they visited no-where else, while family outing was the activity least associated solely with the New Forest, with only 10% of interviewees indicating they only visited the New Forest for that activity.
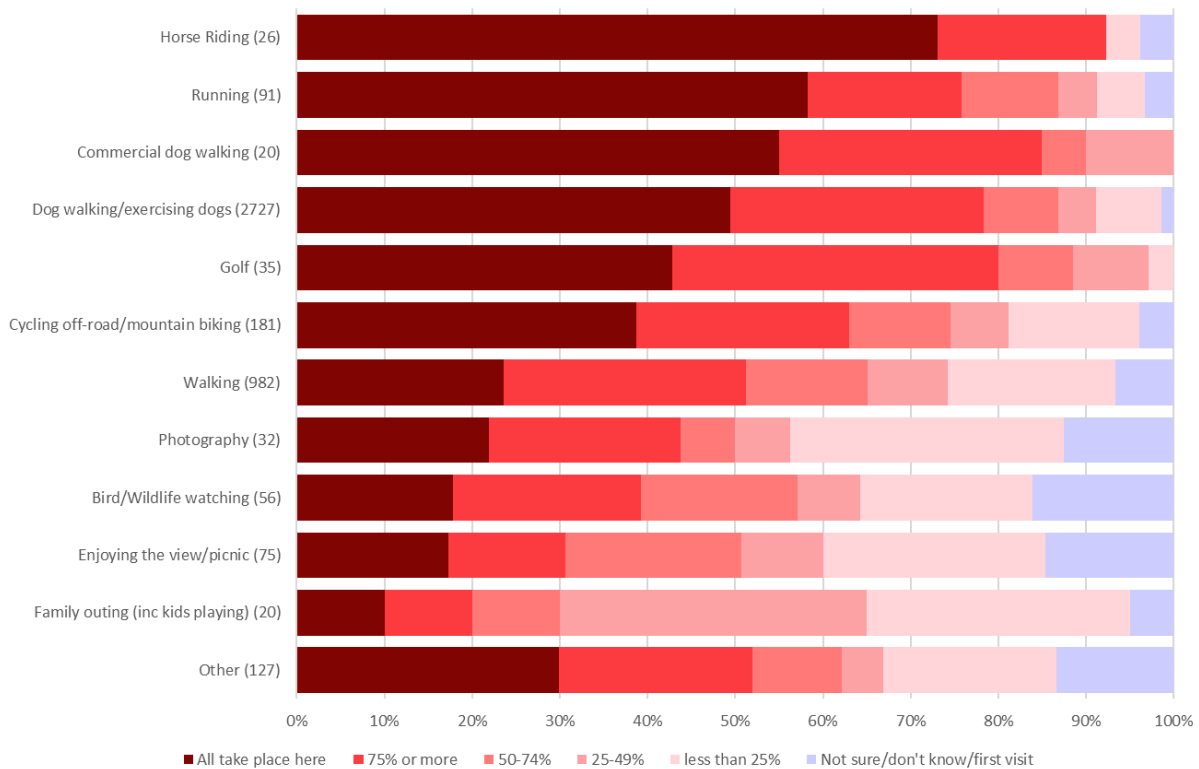
Figure 12: Percentage of visits to other sites (away from the New Forest) by activity type (from Q17). Question asked of those on a short visit/day visit directly from home that day (base sample 4434 interviewees). Activities with at least 20 interviewees shown. Categories are sorted by the percentage of interviewees whose visits for the current activity all take place in the New Forest. Sample size for each activity shown in brackets.

4.42   There were 2,604 interviewees who indicated they visited other sites in Q17 and these were subsequently asked to name another location they visit for the given activity. Responses were recorded as free text and subsequently checked and standardised to correct spelling and ensure consistency.

4.43   Of these 2,604 interviewees:

• 31% of these named a specific coastal site or indicated they visited the coast in general (e.g. 'local beaches');

- 7% named a country park;
- 4% named another National Park in the UK;
- 3% named another part of the New Forest SPA/SAC (for example 'Hatchet Pond);
- 1% referred to a long distance path/route;
- 19% indicated a broad location rather than a specific site (e.g. 'local beach', 'Dorset', 'Purbeck').

4.44   In total 531 different sites were named by interviewees, reflecting a wide range of locations. Sites (named by at least 5 interviewees) are listed in Appendix 4. The top ten named locations were:

- Hengistbury Head (96 interviewees, 4%)
- Lepe Country Park (86, 3%)
- Purbeck (61, 2%)
- Lymington Marshes (54, 2%)
- Highcliffe beach (52, 2%, note that a further 38 interviewees also stated 'Highcliffe')
- Southampton Common (45, 2%)
- South Downs (44, 2%)
- Bournemouth beach (40, 2%)
- Barton-on-sea (39, 1%, note that a further 23 also stated Barton-on-sea 'beach')
- Mudeford (38, 1%)
- Highcliffe (38 ,1%)

4.45   Other locations (besides the top ten in bullets above) are shown in Figure 13

Figure 13: Other locations visited by interviewees. Size of lettering reflects number of times site named. The 10 most commonly named locations are omitted (see para 4.44).

Off-site management interventions (Q19-21)

4.46   In order to understand what interventions could be done away from the New Forest woodland and heathland to draw recreational use, interviewees were asked if they would use footpaths and rights of way (away from the New Forest woodland and heathland) if they were improved. In a similar vein,

51

interviewees were also asked whether they might use a new Country Park (outside the woodland and heathland of the New Forest), if such a park were created.

4.47   Responses are summarised in Figure 14, which is split between visit type. The responses would suggest that both approaches (Country Park and improved footpath network) would be used by interviewees to a similar extent and there is relatively little difference in the numbers of interviewees selecting each.

Those travelling from home on short visit/day visit

	No	Maybe	Yes
New Country Park	35%	21%	40%
Footpaths and rights of way improved	36%	16%	42%

Those on holiday/other visit types

	No	Maybe	Yes
New Country Park	28%	21%	45%
Footpaths and rights of way improved	27%	20%	45%

■ No   Maybe   ■ Yes
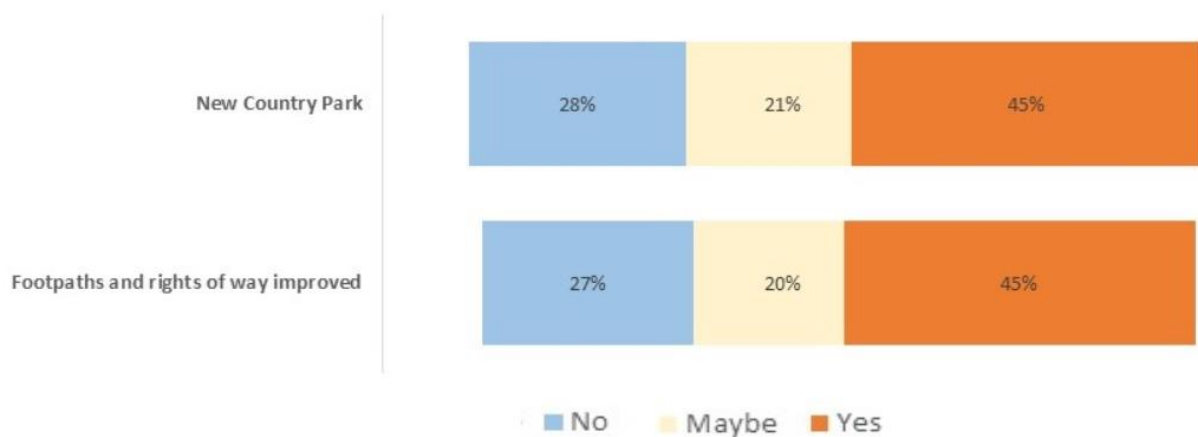
Figure 14: Percentage of interviewees and whether they would make more use of footpaths and rights of way outside the New Forest if they were improved (Q19) or use a new country park (Q20). Plot split using data from Q1 on visit type.

4.48   Using the data for all interviewees we checked the number of interviewees who showed a distinct preference, i.e. answered that they would use one type of measure (improved path network or Country Park) and not the other. This showed relatively even proportions showing a preference for a single

measure, with 14% of interviewees saying they would use a new Country Park and not an improved path network while 16% of interviewees said they would use an improved path network and not a new Country Park. Comparing between activities (Table 10) there were some slight but significant differences, with those undertaking other activities showing a preference for the Country Park and over a fifth (21%) of cyclists preferring the improved path network (x^2_6=28.99, p<0.001). Comparing between visit frequency suggested frequent visitors showed greater preference for improved footpaths over a country park, but the opposite pattern for the infrequent visitors (see Table 11).

Table 10: Number (%) of interviewees answering 'yes' that they would use either a new Country Park (Q20) or an improved path network (Q19), but not the other, categorised by simplified main activity.

Simple main activity	Preference for Country Park	Preference for improved path network	Neither or both	Total
Dog walking/exercising dogs	371 (13)	482 (17)	2067 (71)	2920 (100)
Walking	210 (15)	234 (17)	963 (68)	1407 (100)
Cycling	48 (16)	63 (21)	189 (63)	300 (100)
Other	135 (19)	95 (14)	469 (67)	699 (100)
Total	**764 (14)**	**874 (16)**	**3688 (69)**	**5326 (100)**

Table 11: Number (%) of interviewees answering 'yes' that they would use either a new Country Park (Q20) or an improved path network (Q19), but not the other, categorised by simplified main activity. Red and blue shading is used to highlight low to high percentages within each column.

Visit frequency	Preference for Country Park	Preference for improved path network	Neither or both	Total
More than once a day (365+ visits a year)	46 (10)	74 (17)	320 (73)	440 (100)
Daily (300-365 visits)	139 (10)	258 (18)	998 (72)	1395 (100)
Most days (180-300 visits)	74 (14)	90 (17)	371 (69)	535 (100)
1 to 3 times a week (40-180 visits)	139 (14)	168 (17)	664 (68)	971 (100)
2 to 3 times per month (15-40 visits)	58 (16)	57 (15)	259 (69)	374 (100)
Once a month (6-15 visits)	86 (22)	51 (13)	255 (65)	392 (100)
Less than once a month (2-5 visits)	116 (19)	97 (16)	396 (65)	609 (100)
First visit	104 (17)	78 (13)	420 (70)	602 (100)
Don't know	2 (33)	1 (17)	3 (50)	6 (100)
Total	**764 (14)**	**874 (16)**	**3688 (69)**	**5326 (100)**

4.49   Interviewees suggested a range of facilities for any potential new Country Park (Figure 15 and Figure 16). Responses were grouped based on the predetermined categories within the questionnaire and further categories were created where there were frequently cited additional suggestions. Some kind of café (or restaurant, pub or bar) was the most popular answer (18% of interviewees that made a suggestion). Extensive or good walking routes were also frequently cited (17%), as was the importance of the site having a wild feel, natural or with wildlife (16%). Interviewees clearly had very divergent opinions, however. Some were clear that they thought no Country Park was necessary as the New Forest was 'perfect' or 'already a haven for dog walking' and there was no need for more commercialisation or facilities. Some felt they would not use a Country Park themselves but wanted it to draw other users, so the New Forest areas remained less busy. Those that undertook specific activities often wanted very specific infrastructure, for example one of the people flying model aircraft suggested a runway while golfers suggested a new golf course and a good clubhouse. Some simply suggested that a new Park should be similar to an existing one – with Moors Valley the most common suggestion (2%).

4.50   Figure 16 is drawn from the free text responses/further details. The figure is based on those responses which were different (or provided further information on) the categories used in Figure 15. For example, a response such as 'seating areas' was omitted from the word cloud as it is already listed in Figure 15, however a response such as 'benches along paths to provide places for elderly to sit' was included. The word cloud highlights how important natural, quiet and wildlife-rich spaces were for many interviewees. The prominence of 'bins' reflects comments relating to both rubbish bins and dog bins.

Feature	Percentage
Refreshments	18%
Extensive/good walking routes	17%
Natural, 'wild', with wildlife	16%
Play facilities	15%
Good views/ scenery	14%
Woodland	14%
Toilets	12%
Off-lead areas for dogs	12%
Open water	12%
Dedicated cycling routes	9%
Sufficient parking	7%
Few people, quiet, not busy	6%
Dog bins	6%
Free parking	5%
Picnic areas, BBQs or seating areas	5%
Open	3%
Dog friendly specifically (e.g. dog wash, dog welcoming café)	3%
Visitor Centre	2%
Accessible for disabled, buggies, prams etc.	2%
Go ape or aerial walkways/zip wires	1%
Information/interpretation	1%
Bike hire	1%
Dedicated horse riding routes	1%
Other	45%

Number of interviewees

Figure 15: Features interviewees suggested they would like to see at a new Country Park (from Q21). Percentages drawn from the number of interviewees (4317) who responded positively, giving some kind of suggestion. Figure drawn from predetermined categories and review of free text responses.

Figure 16: Word cloud summarising further details relating to features interviewees wished to see at a new Country Park (from Q21).

Visitor origins (home postcodes, Q23)

Overview

4.51   In total, 4,871 interviewees (91%) gave a full, valid UK postcode that could be geocoded using the national database. Postcode data are summarised in the following maps:

- Map 7 shows all interviewee postcodes, which range from the Isle of Wight in the south to Aberdeenshire in northern Scotland;
- Map 8 repeats the information in Map 7, but just shows more local postcodes and also shows 5km bands out to 25km around the New Forest SPA/SAC;
- Map 9 shows the same geographic area as Map 8, however only those who were on a short visit/day trip from home are shown and the shading reflects the different activity types;
- Map 10 shows the same data as Map 9, however the shading reflects frequency of visit, with frequent visitors shown in the red colours with the darker red reflecting the most frequent.

4.52   These data reflect a general pattern whereby visitors on a short visit/day trip from home live relatively close whereby those on holiday come from a wide geographic spread (and potentially further afield than the UK as we have not tried to map those holiday makers who were visiting from abroad).

Map 7: All interviewee postcodes by visit type

0   100.0
kilometers
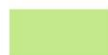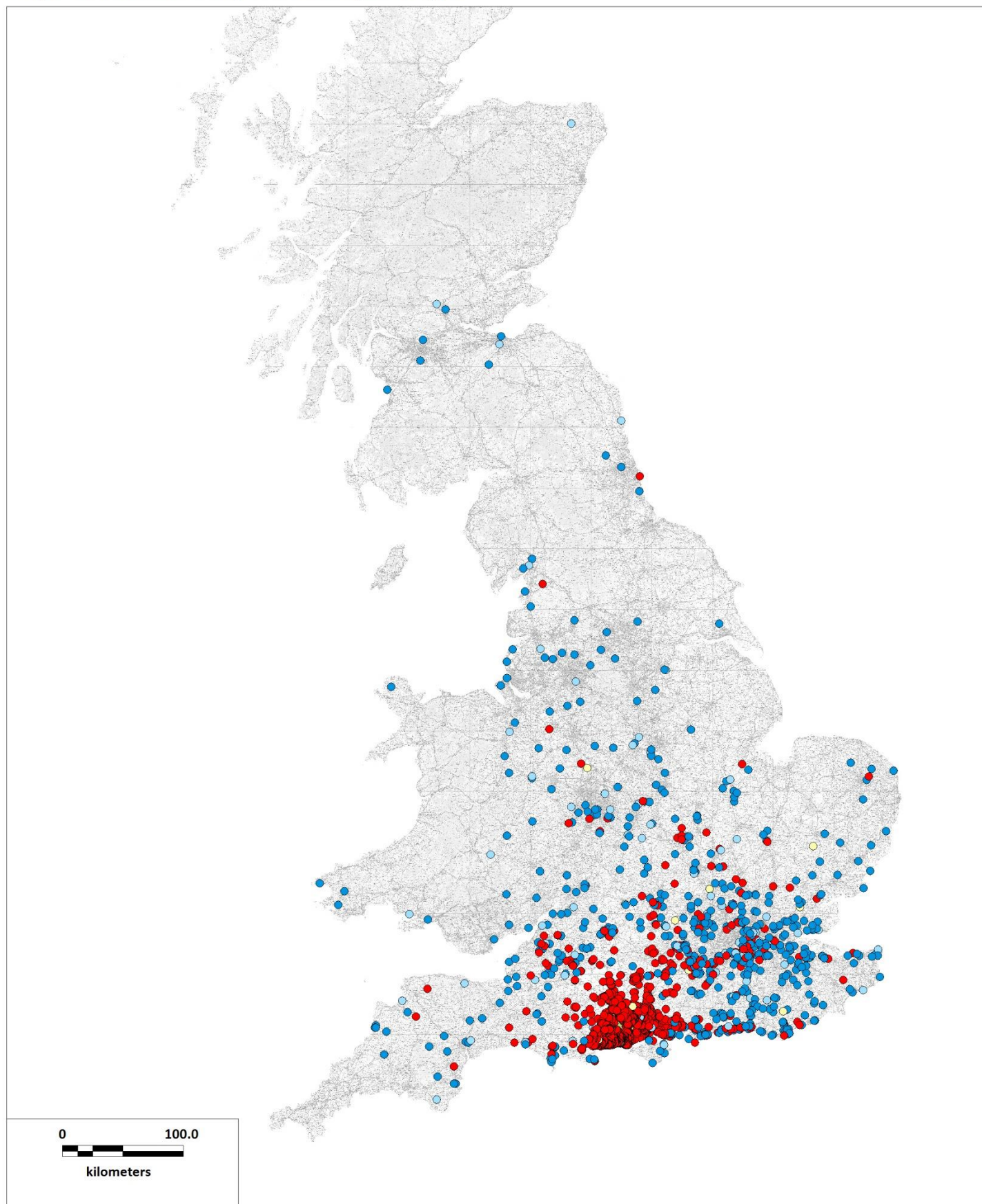
New Forest SPA/SAC

- ● Short/day visit travelling directly from home   (4160)
- ● Staying away from home on holiday   (587)
- ● Staying away from home with friends or family   (94)
- ○ Other   (30)

Map 8: All interviewee postcodes by visit type, local area only

5km
10km
15km
20km
25km

0   20.00
kilometers

ENGLISH CHANNEL
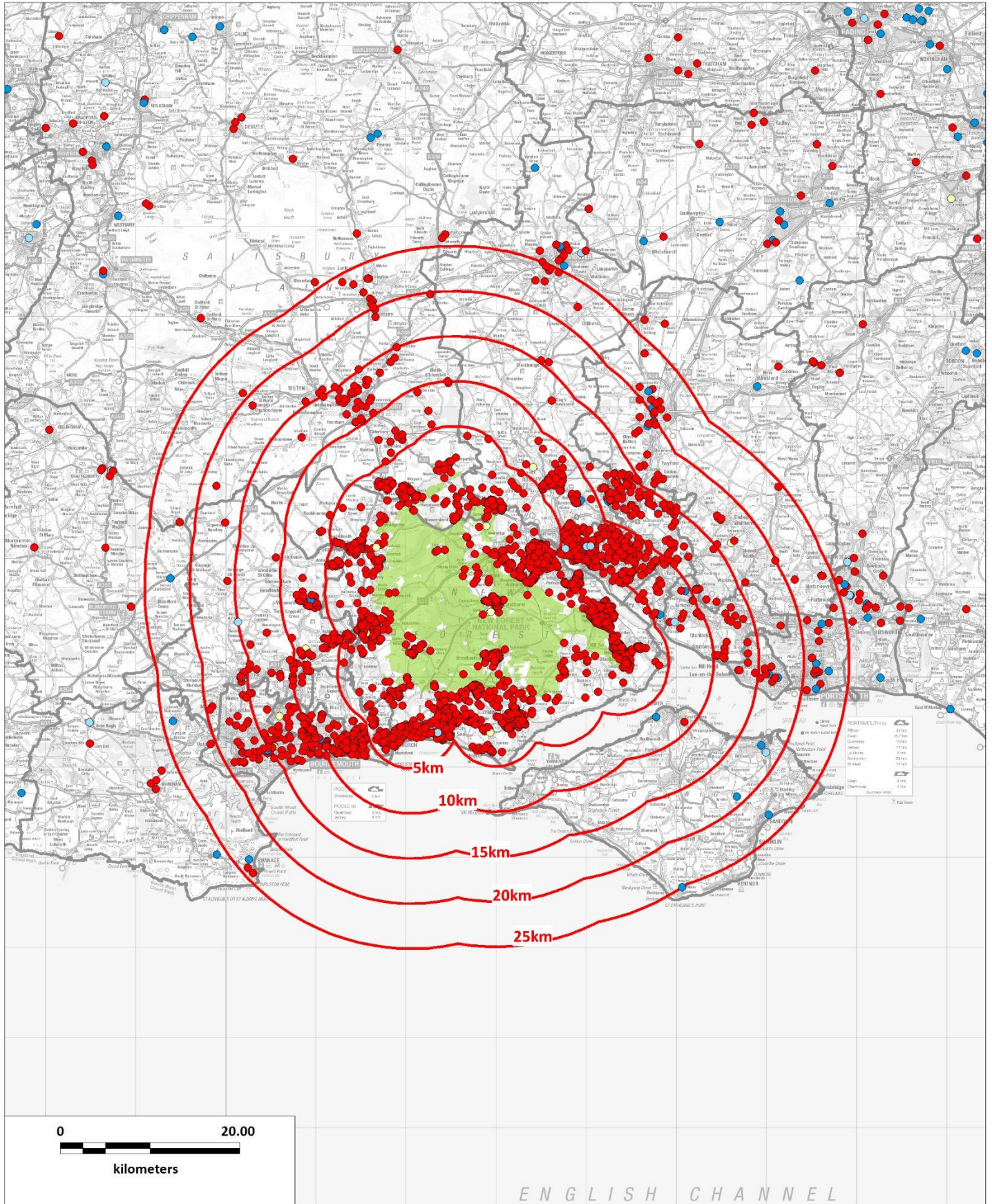
New Forest SPA/SAC

5km bands from SPA/SAC, out to 25km

Local authority boundary

● Short/day visit travelling directly from home   (4160)
● Staying away from home on holiday   (587)
● Staying away from home with friends or family   (94)
● Other   (30)

Map 9: All interviewee postcodes by activity, local area only

5km

10km

15km

20km

25km

0   20.00
kilometers

ENGLISH CHANNEL

New Forest SPA/SAC

5km bands from SPA/SAC, out to 25km

Local authority boundary

Dog walking/exercising dogs (2578)
Walking   (906)
Cycling   (185)
Other   (491)

Map 10: All interviewee postcodes by frequency of visit, local area only

5km
10km
15km
20km
25km

0   20.00

kilometers

ENGLISH CHANNEL
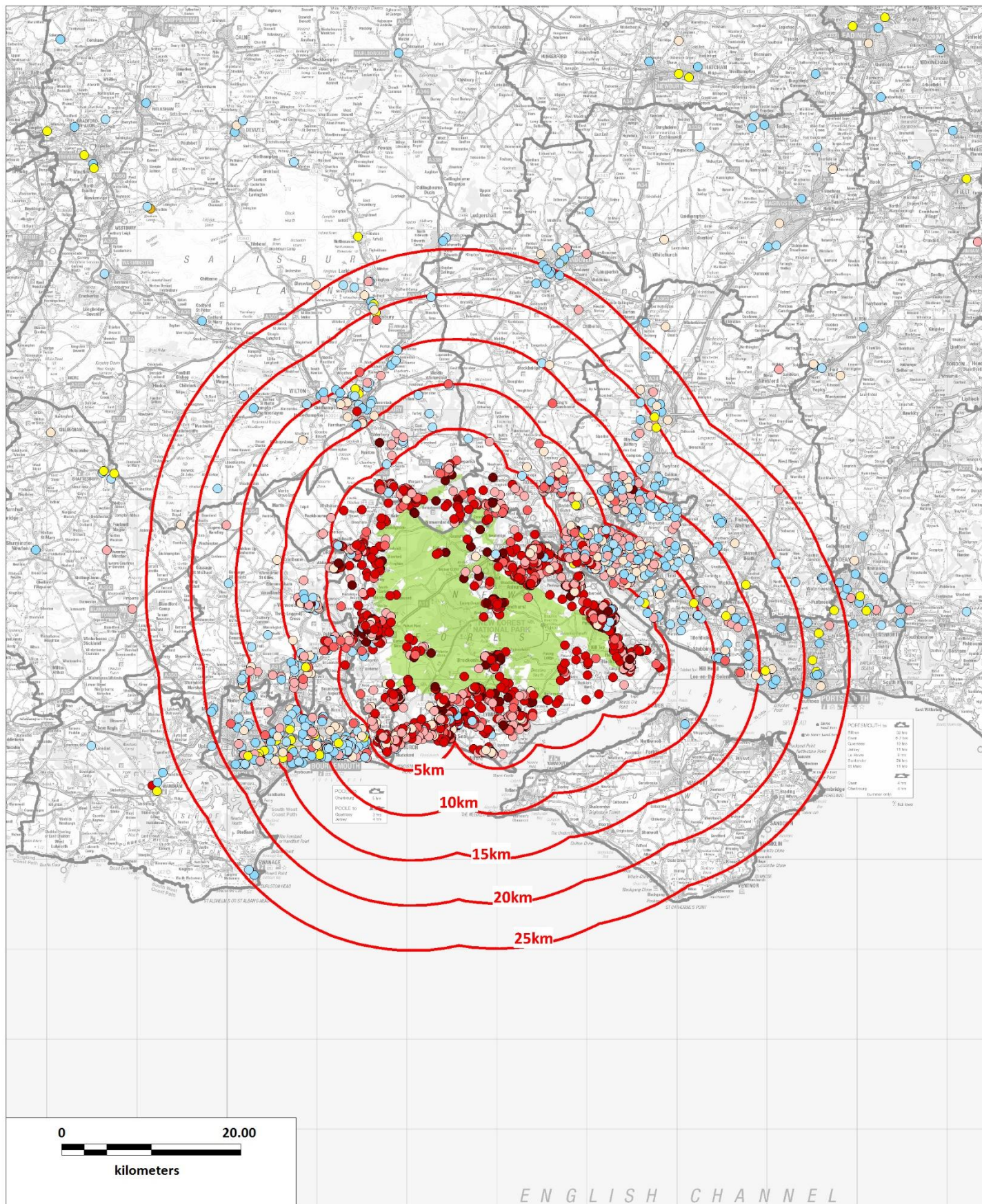
New Forest SPA/SAC

5km bands from SPA/SAC, out to 25km

Local authority boundary

● More than once a day (365+ visits a year)	(406)
● Daily (300-365 visits)	(1322)
● Most days (180-300 visits)	(498)
● 1 to 3 times a week (40-180 visits)	(873)
● 2 to 3 times per month (15-40 visits)	(331)
● Once a month (6-15 visits)	(310)
● Less than once a month (2-5 visits)	(295)
● Don't know	(3)
● First visit	(121)

By built-up area

4.53   Table 12 lists the built-up areas with the most interviewees, showing all those with at least 20 interviewees. In total around two-thirds (67%) of interviewees came from these settlements. The Bournemouth/Poole conurbation[9] was the single built-up area from which the most interviewees originated (12% of all interviewees), with the South Hampshire[10] built-up area second (9%).

[9] Built-up areas are defined by the Office of National Statistics, representing discrete settlements; Bournemouth/Poole does also include Christchurch and extends also to Barton on Sea and New Milton

[10] The built-up area for; South Hampshire extends from Southampton to Havant.

Table 12: Built-up areas (as defined by Office of National Statistics) and the number of interviewees from each, by visit type. Built-up areas ranked by total number of interviewees, all those with at least 20 interviewees shown

Built-up area	Visit type			Total (% of all interviewees)
	Short visit/day trip direct from home	Staying with friends/family or on holiday	Other	
Bournemouth/Poole	611	5	6	622 (12)
South Hampshire	448	26		474 (9)
Hythe	457	0		457 (9)
Totton	381	2	1	384 (7)
Ringwood	217	0	1	218 (4)
Blackfield	204	1		205 (4)
Lymington	168	1	3	172 (3)
Greater London	31	94	2	127 (2)
Marchwood	102	0		102 (2)
Brockenhurst	91	2		93 (2)
Sway	88	0		88 (2)
Lyndhurst	88	0		88 (2)
West Wellow	77	0		77 (1)
Morgan's Vale	70	0		70 (1)
Bransgore	58	0		58 (1)
Fordingbridge	55	0		55 (1)
Romsey	38	0		38 (1)
St Leonards	31	0		31 (1)
Nomansland	30	0	1	31 (1)
Brighton and Hove	10	19		29 (1)
Downton	29	0		29 (1)
Salisbury	28	0		28 (1)
Burley	23	0		23 (0)
Alderholt	23	0		23 (0)
Verwood	21	2		23 (0)
Winchester	16	4		20 (0)
Total	**3,395**	**156**	**14**	**3,565 (67)**

By local authority

4.54 Visitor origins by local authority are shown in Figure 17 and

4.55　　Table 13. These summaries give the totals for the New Forest National Park and then for the other local authorities within 25km, excluding those areas within the National Park. We have only listed those authorities which fall at least partly within 25km of the SPA/SAC and we have given totals for the original Dorset local authorities (within the 25km) which were merged while the survey was taking place.

4.56　　In total, 20% of interviewees on a short visit or day trip from home that day gave postcodes within the National Park boundary. A further 40% came from outside the National Park but within the New Forest District. Other local authorities accounted for relatively small proportions of the interviewees by comparison.
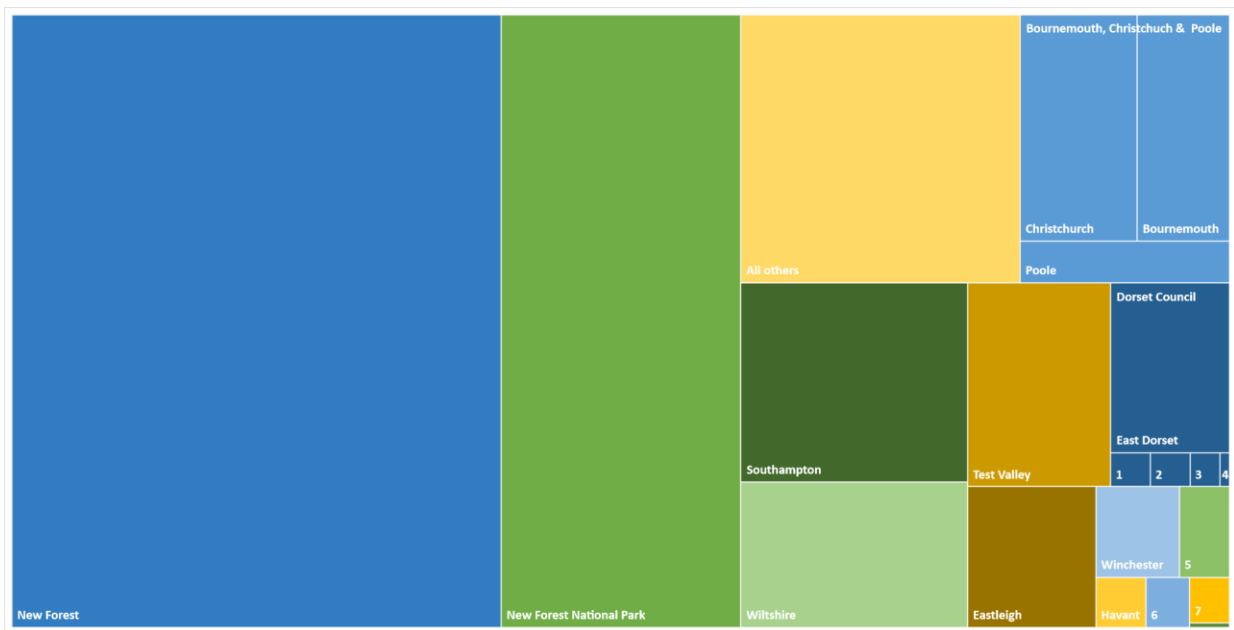
Figure 17: Proportion of interviewee geocoded postcodes (those travelling from home on short visit/day trip only) by local authority. Data matches Table 13. (numbered labels are relate to: 1=Purbeck, 2= N. Dorset, 3=W. Dorset, 4=Weymouth, 5=Fareham, 6=Gosport, 7=Portsmouth, and IOW below Portsmouth)

Table 13: Numbers of interviewee geocoded postcodes (%) by local authority. Only local authorities that fall partly or wholly within 25km of the New Forest SPA/SAC are included. *Figures for Dorset were extracted using the original boundaries and therefore the total given relates to the five old authorities listed. Data matches Figure 17.

Local authority	Previous authority	Interviewees from home	All interviewees
New Forest District		1781 (40)	1794 (37)
New Forest National Park		874 (20)	883 (18)
Bournemouth, Christchurch & Poole		334 (8)	339 (7)
Bournemouth, Christchurch & Poole	Christchurch	157 (4)	158 (3)
Bournemouth, Christchurch & Poole	Bournemouth	125 (3)	127 (3)
Bournemouth, Christchurch & Poole	Poole	52 (1)	54 (1)
Southampton		268 (6)	275 (6)
Wiltshire		196 (4)	212 (4)
Test Valley		173 (4)	181 (4)
Dorset Council*		144 (3)	166 (3)
Dorset Council	East Dorset	120 (3)	125 (3)
Dorset Council	Purbeck	8 (0)	13 (0)
Dorset Council	West Dorset	6 (0)	12 (0)
Dorset Council	North Dorset	8 (0)	10 (0)
Dorset Council	Weymouth & Portland	2 (0)	6 (0)
Eastleigh		107 (2)	111 (2)
Fareham		27 (1)	31 (1)
Havant		15 (0)	20 (0)
Gosport		13 (0)	15 (0)
Portsmouth		11 (0)	16 (0)
Isle of Wight		1 (0)	7 (0)
Winchester		45 (1)	51 (1)
All others		445 (10)	770 (16)
Total		**4434 (100)**	**4871 (100)**

4.57   Visitor origins at different survey points are shown in Map 11. Here the pie-charts show the numbers of interviewees from different broad zones, defined primarily using local authority boundaries. The inset shows how the zones have been defined. The map clearly shows that people visiting from Wiltshire tend to visit the northern parts of the New Forest SPA/SAC (north of the A31). People from Bournemouth, Christchurch and Poole tend to visit the south-western part while those living between the SPA/SAC and Southampton Water tend to visit the eastern side of the SPA/SAC. The survey points towards the middle of the SPA/SAC tended to have higher proportions of very local people (e.g. from Brockenhurst, Lyndhurst etc.) and those from much further afield.

Map 11: Numbers of interviews per survey point by origin

Legend (top right):

■ A		■ F	
■ B		■ G	
■ C		■ H	
■ D		■ I	
■ E		□ all others	

Scale: 0 — 4,000 meters
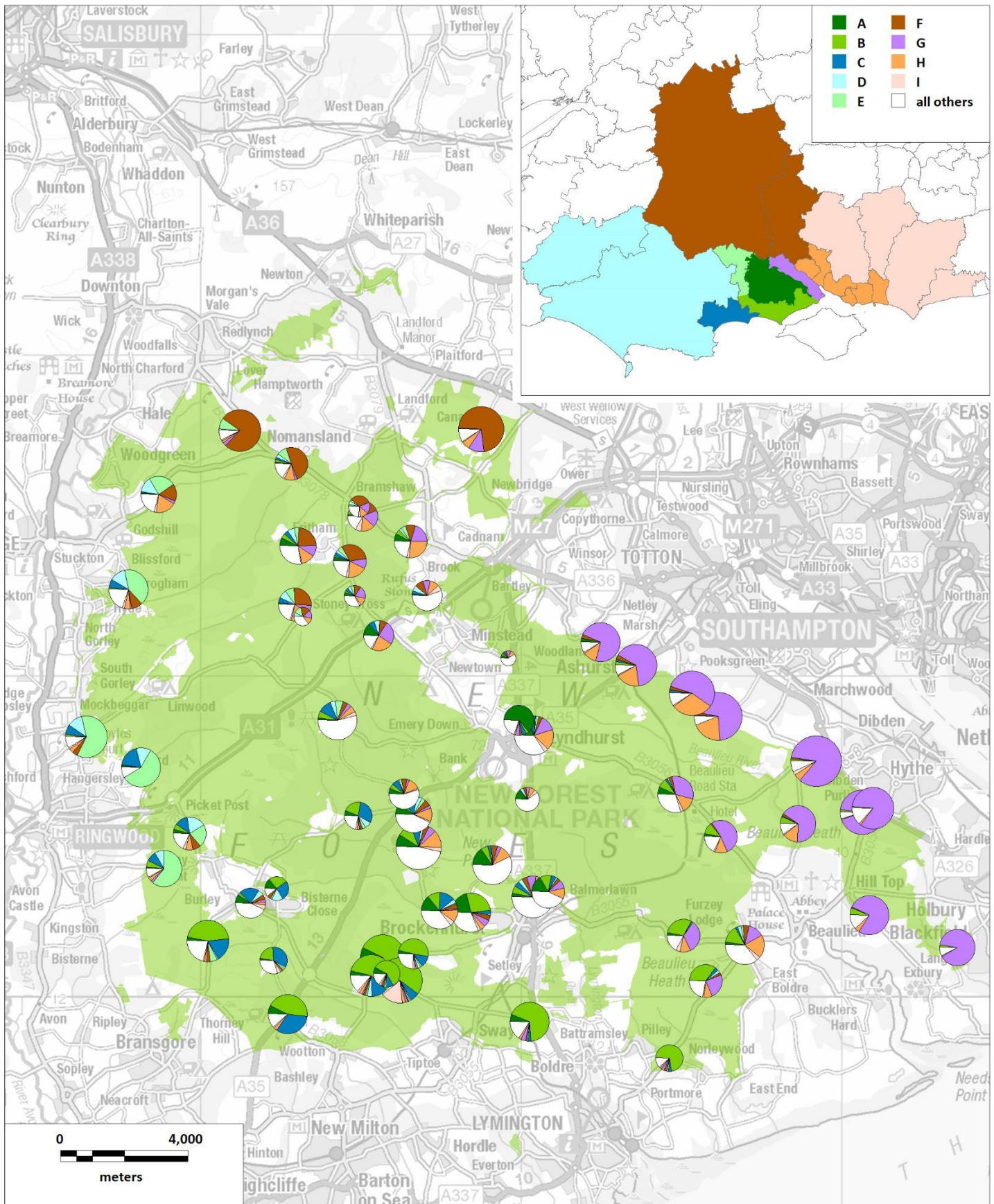
Number and origin of interviewees

200
100
20

New Forest SPA/SAC

■ A New Forest SPA/SAC (outer boundary)
■ B New Forest coast
■ C Bournemouth, Christchurch & Poole
■ D Dorset & S. Somerset

■ E West New Forest District
■ F Wiltshire & Test Valley
■ G East New Forest District
■ H Southampton to Portsmouth

■ I Winchester to Arun Valley
□ All Others

Note: Following site locations slightly offset to make pies more visible: Hinchelsea Moor, Wilverley Inc, Longslade Hill, Ocknell Pond & Heath Roundabout
Contains Ordnance Survey Data. © Crown Copyright and Database Right 2019.
Designated site boundaries downloaded from Natural England website. © Natural England.

Linear distance ('as the crow flies')

4.58   The median distance for all interviewees from their home postcode to the interview location was 7.75km and 75% originated from within 21.4km (Table 14). For those on a short visit/day trip from home, the median was 6.1km with 75% living within 13.8km of the interview location. For those visiting directly from home on a short visit, the median distance in the summer (5.83km) is the same as the winter distance and very close to the spring, suggesting little annual change. For all visitors however, the summer median distance is higher (11.28km), indicating the higher proportion of holiday-makers at this time of year.

Table 14: Summary statistics for the distance (km) between home postcode and survey location for different groups of interviewees. The top half are all interviewees (i.e. all visit types) while the lower half is the subset that were on a short visit/day trip from home.

Grouping	N	Mean (±1 SE)	Median	Range	75%
All interviewees	**4871**	**30.88 (±0.85)**	**7.75**	**0.07-745.59**	**21.38**
Dog walkers	2740	15.44 (±0.82)	4.72	0.07-622.08	9.01
Walkers	1224	51.67 (±2.07)	18.85	0.07-610.03	67.47
Cyclists (all types)	279	56.76 (±4.38)	20.85	0.60-393.11	94.87
Winter interviewees	1782	24.42 (±1.18)	7.17	0.07-610.03	17.69
Spring interviewees	2048	29.52 (±1.29)	7.39	0.07-622.08	20.16
Summer interviewees	1041	44.66 (±2.30)	11.28	0.10-743.59	57.77
Those visiting at least daily	1734	4.42 (±0.09)	3.50	0/07-43.99	5.70
Short visit/day trip from home	**4160**	**13.14 (U0.38)**	**6.09**	**0.07-456.59**	**13.79**
Dog walkers	2578	7.67 (±0.28)	4.41	0.07-195.42	7.99
Walkers	906	22.58 (±1.19)	12.53	0.07-456.58	22.11
Cyclists (all types)	185	17.74 (±1.43)	12.27	0.60-141.84	22.12
Winter interviewees	1576	11.74 (±0.58)	5.83	0.07-456.58	12.57
Spring interviewees	1775	12.92 (±0.57)	6.01	0.07-256.42	13.54
Summer interviewees	809	16.36 (±0.97)	5.83	0.07-288.13	17.02
Those visiting at least daily	1728	4.41 (±0.09)	3.50	0.07-43.99	5.70

4.59   Summary statistics by survey point are given in Appendix 5. For some survey points the interviewee postcodes came from a particularly wide area, there were ten locations for example where the 75th percentile was greater than 100km. These were Burley Cricket, Balmer Lawn, Bolderford Bridge, Blackwater, Brock Hill, Clayhill Heath, Knightwood Oak, Bolderwood, Minstead Road and the Rufus Stone.

4.60   Overall the majority (62%) of interviewees lived within a 5km radius of the SPA/SAC boundary. In Figure 18 we show the number of interviewees coming from different distance bands (drawn around survey points rather than the SPA/SAC boundary) and this shows a clear decline with distance

after 3km. The numbers of interviewees originating in the first two bands is low as there is likely to be relatively little housing in these bands. It is interesting to note that it is only from around 27km or so that the numbers of interviewees is relatively low and consistent with increasing distance.
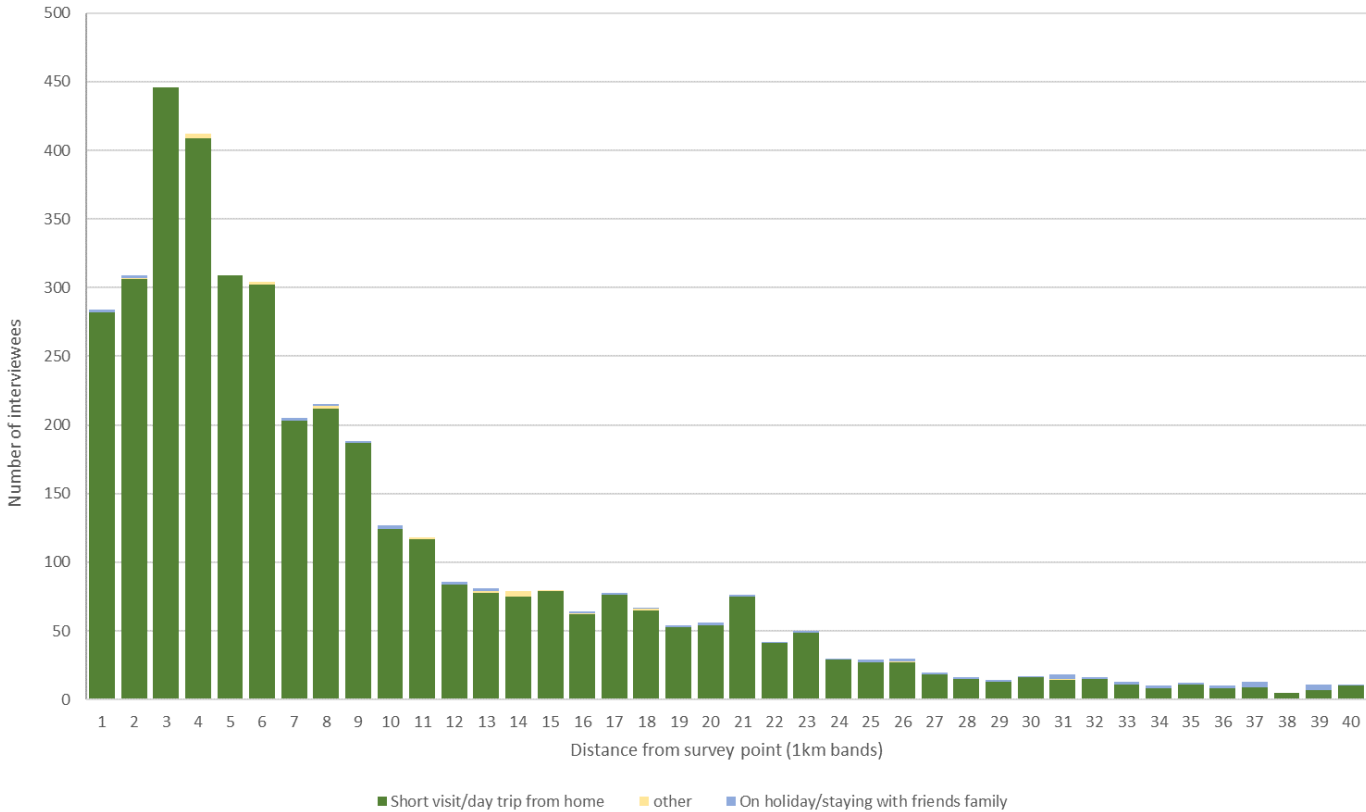
Figure 18: Number of interviewees from different distance bands (1km bands from individual survey points).

4.61   In Table 14 and Appendix 5 we give some of the values for the 75th percentiles for different groups of interviewees. The 75th percentile is a useful measure in that it provides an indication of the distance within which the majority of interviewees originate. We show the same data spatially in Map 12, where the closest 75% of the postcodes (distances measures 'as the crow flies' from home postcode to survey point) have been enclosed, creating a region (a convex hull) in the GIS. Data are shown separately for a selection of survey points, for three types of activity (main activities of dog walking, cycling and walking) and for all interviewees travelling from home on a short visit/day trip. It can be seen that for some groups shown (walkers, cyclists, interviewees at the Knightwood Oak) visits originate from a wide area, while for other groups and activities the convex hulls are much smaller. Using the data for all interviewees visiting from home on a short visit/day trip it can be seen the area enclosed is broadly circular and of a relatively even width around the SPA/SAC.

4.62 With respect to the preferences for different interventions, there was a significant difference in the Euclidean distances for those who showed a preference for a country park compared to those who preferred improvements to the footpath network (Kruskal-Wallis H=17.37, p<0.001). Those who showed a preference for a country park tended to live slightly further away (median 10.5km) compared to those who preferred footpaths (median 7.5km) or those who showed a preference for neither (median 5.7km).

Map 12: Selected convex hulls around 75% of interviewees
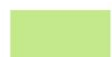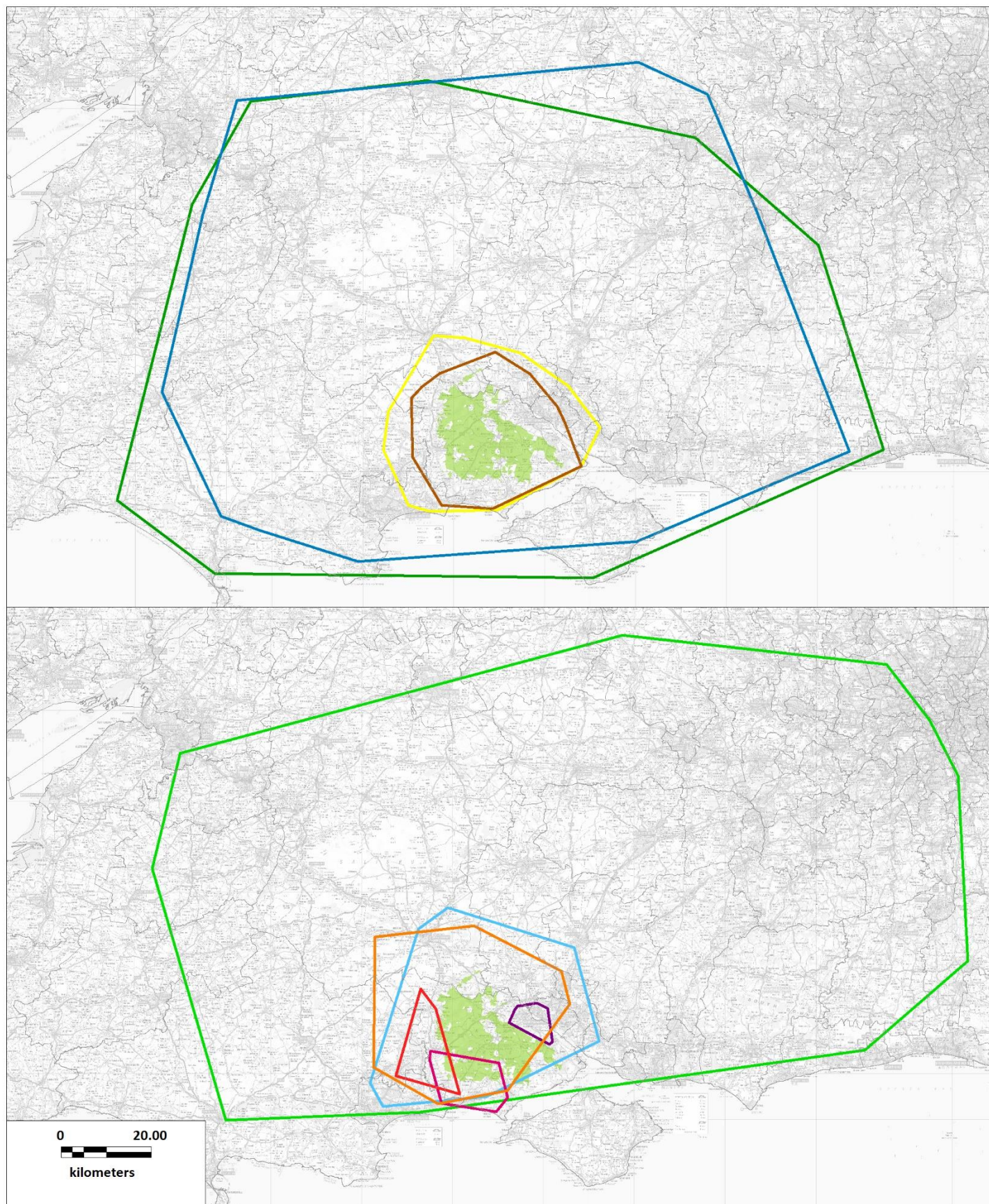
New Forest SPA/SAC

Upper map window: activity focus
(sample size given in brackets)

- ☐ Travelling from home on short visit/day trip (4160)
- ☐ Cycling (279)
- ☐ Dog walking/exercising dogs (2740)
- ☐ Walking (1224)

Lower map window: selected survey points
(sample size given in brackets)

- ☐ Deerleap, all interviewees (118)
- ☐ Janesmoor Pond, all interviewees (75)
- ☐ Knightwood Oak, all interviewees (58)
- ☐ Wilverley Inclosure, all interviewees (108)
- ☐ Rockford Common, all interviewees (107)
- ☐ Telegraph Hill, all interviewees (77)

Travel time isochrones

4.63   Travel time isochrones, reflecting the drivetime (in minutes) from car parks around the periphery of the New Forest SPA/SAC[11], are shown in Map 13. It can be seen that most interviewees, especially the more frequent visitors do live within a 10 minute drive and there are also clear effects from the M3 and other main routes, such as the A36 and A338 heading north towards Salisbury.

4.64   The number of interviewees by different drive times are summarised in Figure 19. In order to derive the figure drivetimes were drawn around each individual survey point (or the nearest parking location to each survey point) and the data pooled. Overall, 42% of interviewees (that gave a valid home postcode) lived within a 10 minute drive of the location where they were interviewed.
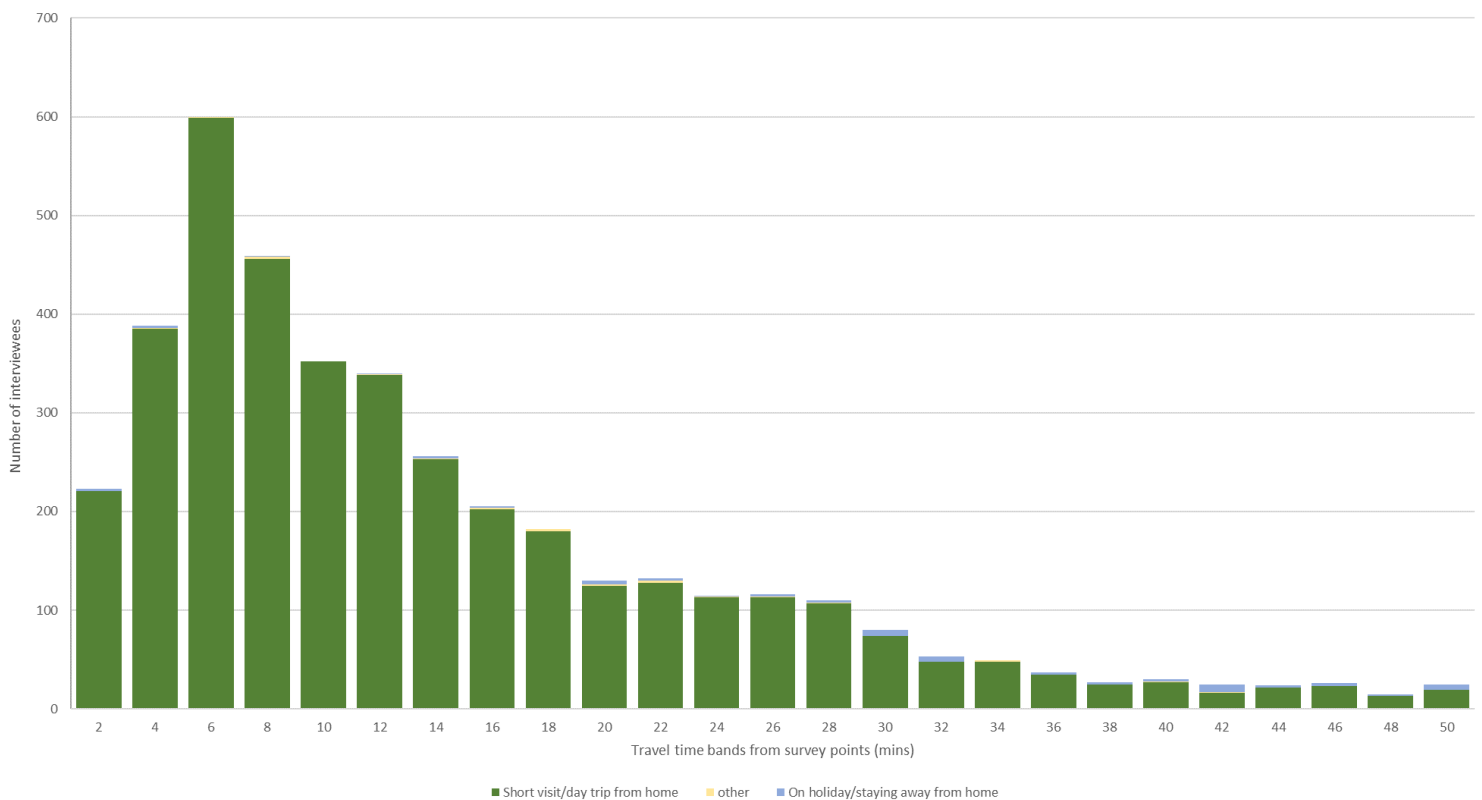
Figure 19: Numbers of interviewees by drive time (2 minute bands). Drive times drawn from individual survey points.

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[11] Isochrones were drawn from the car park on each road that was closest to the SPA/SAC boundary; as used in the telephone survey report

Map 13: Interviewee postcodes by frequency of visit, local area only with travel isochrones

0   20.00

kilometers

ENGLISH CHANNEL
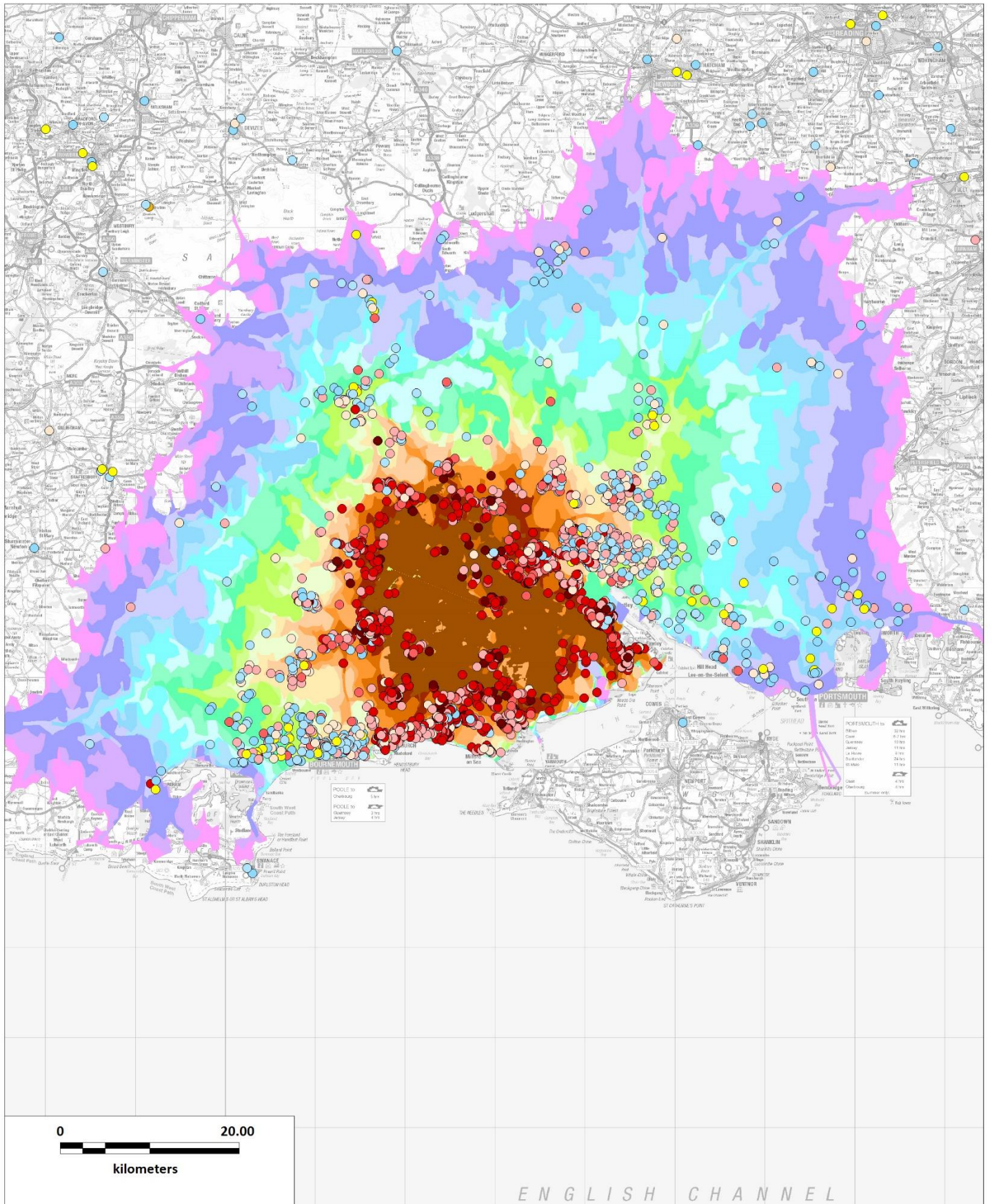
Interviewees on short visit/day trip from home

- ● More than once a day (365+ visits a year)   (406)
- ● Daily (300-365 visits)   (1322)
- ● Most days (180-300 visits)   (498)
- ● 1 to 3 times a week (40-180 visits)   (873)
- ● 2 to 3 times per month (15-40 visits)   (331)
- ● Once a month (6-15 visits)   (310)
- ● Less than once a month (2-5 visits)   (295)
- ● Don't know   (3)

Drive time isochrones
(2 min bands from peripheral car-parks around SPA/SAC)

2	16	30
4	18	32
6	20	34
8	22	36
10	24	38
12	26	40
14	28	42

Types/groups of visitor

4.65   We used a range of different metrics from the visitor survey results to identify particular visitor types/groups. These are summarised in Figure 20. We identified 15 groups which represented 92% of the interviewees and the figure shows the relative numbers of interviewees (that fitted into our classification) in each group. It can be seen that these mutually exclusive groups accounted for variable numbers of interviewees (for example just 0.4% of all interviewees fell into our group called commercial dog walkers). The colours represent different broad activity types, with the brown/orange colours reflecting dog walking, the green reflecting those walking, the yellow those cycling and the grey shading all others.

Regular 1+ dog walkers, from home (20%)
- Average 1.6 adults per group
- 86% visit equally all year round
- average c. 322 visits per year
- 95% by car
- Typically live within 6.4 km (mean)
- 58% with minors
- Visit lasts c. 65 mins

Regular lone adult, dog walkers within 5km (18%)
- 55% visit because it is close to home
- 87% visit equally all year round
- Typically live within 2.5 km (mean)
- Only 0.6% were with minors
- 74% less than 1 hour on site

Dog walkers on holiday (2.6%)
- 31% no awareness of wildlife
- Average 2 adults per group
- 74% with minors

Infrequent dog walkers, from home (8.0%)
- 26% alternative sites are coast
- Typically live within 12 km (mean)
- 64% with minors
- 48% on site less than 1 hour

Commercial dog walkers (0.4%)
- Average of 4 dogs
- Live within 6km
- 71% aware of sensitive birds

Other activities, infrequent visitors from home (6.3%)
- 20% enjoying view/picnic, 15% runners, 15% bird/wildlife watching
- Typically live within 28 km (average)
- 34% 2-15 visits per year, 10% on first visit

Infrequent walkers from home (15%)
- 2.1 adults and 0.8 minors
- Long route length 4.7km
- Typically live within 26 km (mean)
- 37% visit 1 to 3 times a week, 20% less than once a month

Other activities, regular visitors from home (2.2%)
- 1.6 adults per group, 61% alone
- 52% daily, mean c.300 visits per year
- 12% horse riders, 10% golfers

Walkers on holiday (7%)
- 2.3 adults and 1 minor per group
- 15% visit equally all year
- 61% on a first visit
- Visit lasts c. 150 mins

Other activities, visitors on holiday (3.0%)
- 28% enjoying view/picnic, 17% bird/wildlife watching
- 58% on a first visit
- Often conducing multiple activities

Regular walkers, from home (3%)
- 45% visit because it is close to home
- 71% visit daily

Cyclists from home, infrequent (2.9%)
- Visit lasts c. 160 mins
- 51% visit daily
- 38% use maps to plan

Cyclists on holiday (1.8%)
- 2 adults and 1.2 minors
- 63% visiting more than 2 hours
- 11% also social activities
- 27% use websites to plan

Cyclists from home, regular (0.7%)
- 1.4 adults, 41% alone
- Very few with minors (18%)
- 22% visit once a month

Social activities, from home (1.6%)
- Typically 2.8 adults and 1.8 minors
- Short route length 3.6km
- Typically live within 28 km (average)
- Visit lasts c. 125 mins

Figure 20: Summary infographic of the 15 visitor profile groups identified. For each visitor group a pictogram visualises the number of adults, minors and dogs in a typical group and bullet points give key features of the visitor group. The central treemap is used to show the relative proportion of each group within the pool of interviewees. A remaining group of 411 interviewees (8%) showed no clear pattern within their visitor profiles and were therefore not assigned to a group (and are not shown).

5. Discussion

5.1 Data from 2,400 hours of visitor survey work across the protected heathland and woodland habitats of the New Forest are presented. These data provide a picture of recreation use from the surveyed locations and capture details of visitor profiles, preferences and behaviour of 5,326 interviewees.

5.2 Recreation use of the New Forest is clearly varied and complex, with the area drawing local residents and those from far afield, staying tourists and those on a short visit from home and a wide range of different activities. Nonetheless some strong, clear patterns are evident in the results.

5.3 Firstly, it is clear that dog walking is the main activity in terms of the number of visits. The tally data indicate 0.8 dogs per group of visitors and across all seasons, 61% of interviewees had a dog with them and 55% of the interviewees gave dog walking as their main activity (Table 3).

5.4 Walking (without a dog) was the next most common activity (26% of interviewees, see Table 3). Walkers tended to visit much less frequently (with 35% visiting 1-3 times per week or more frequently and 21% on their first visit) compared to dog walkers (where 84% were visiting 1-3 times per week or more frequently). The data suggest that 3.7 different walkers would make the same number of visits to the New Forest SPA/SAC as a single dog walker.

5.5 Those whose main activity was dog walking or walking accounted for some 81% of the interviewees and while numerous other activities were recorded, no other single main activity type involved more than 5% of interviewees.

5.6 There was a very striking and clear pattern in the spatial distribution of activities (see Map 3). At the more peripheral survey locations, particularly those close to urban centres, dog walking was by far the most frequently recorded main activity and high levels of use were recorded. Walking tended to dominate at the more central locations, such as Blackwater, Bolderford Bridge and Bolderwood.

5.7 As such there is a pattern of lots of repeat visits, by dog walkers, to the more peripheral sites. Many of these visitors are very local and travelling relatively short distances. In our visitor groupings (Figure 20) we attribute 18% of interviewees to a group that is regular, lone adult dog walkers who live within 5km. A further 20% of interviewees are regular dog walkers coming from home but not visiting on their own, tending to come from slightly further afield and walking for slightly longer.

5.8   The postcode data reveal that, for those coming from home on a short visit/day trip, 50% of interviewees lived within 6.1km of the survey location (i.e. the median value) and 75% lived within 13.8km. 14km therefore provides a good rule of thumb for how far the majority of local visits originate from. These distances are based on the distance to the survey location, many of which were inside the SPA/SAC boundary. It therefore follows that 62% of all interviewees lived within 5km of the SPA/SAC boundary. In our multi-variate analyses there were clear effects of distance and (from Figure 25) it would appear to be around 11km (home postcode to survey point) that there is a switch in many of the metrics, with those living within 11km more likely to visit in small groups, visit regularly, with a dog and they were more aware of issues to do with bird disturbance.

5.9   These results highlight the links between development around the periphery of the New Forest SPA/SAC and the recreational use of the Forest. The strong spatial patterns of use mean there are clear differences between different locations within the New Forest in recreational use. This has implications for recreation management and potential mitigation approaches.

5.10   The alternative sites visited by interviewees indicates the cross-over between the New Forest and coastal sites. 31% of interviewees named a coastal site as an alternative destination and the top 5[12] alternative sites were all coastal. This has a range of implications as many of the coastal sites are also ones where there is a difficult balancing act between access and nature conservation. The cross-over would suggest that education and awareness raising initiatives could well have some overlap and also any measures which might deflect access, either from the New Forest or from the coast, may have wider implications. For example, measures to restrict access for dogs on the coast may well mean that dog walkers switch to visiting the New Forest.

5.11   The results from the question on visitor awareness of species/habitats vulnerable to recreation impacts indicate a relatively high level of awareness, with 67% of interviewees able to name a species or habitat (see Figure 10). It was clear from the interview responses that many interviewees did have a good knowledge and were able to name specific species and areas of concern. 40% of interviewees mentioned breeding birds or ground-nesting birds, for example. This is potentially a positive reflection on the recent promotion of issues around disturbance relating to ground nesting birds and keeping dogs on the main tracks. It is further interesting to note that those

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[12] Assuming a visit to 'Purbeck' to involve the coast

visitors with more awareness tended to also be those regularly, from nearby, with a dog (see Figure 25).

Limitations

5.12   It is important to recognise that the data presented are from a sample of interviews with visitors, and therefore do not necessarily represent the access patterns of all visitors to the New Forest. While every effort was made to ensure that sample was random, the following should be taken into account when interpreting the results.

- Sixty survey locations were used, mostly car parks but also a range of foot access points and path intersections. Some activities and types of use are very focussed to specific locations or have a strong geographic bias (for example golf or fishing) and the choice of survey locations will very much influence the relative proportions of some of these activities in the interview data;
- Survey effort at each location totalled 5 surveyor days (40 hours), from a range of different months. These provide data from different times of year but are not necessarily balanced – for example a fifth of the survey effort (8 hours) was conducted during the school summer holiday period (6 weeks, around a ninth of the year).
- The surveyors selected the next person they saw (if not already interviewing), and this will mean that activities that involve people lingering around the car park or survey location may be more likely to be interviewed.

5.13   Using the tally data it is possible to check how well the interviews reflect the overall totals of different activities, in particular how well activities such as cycling and horse riding (which are potentially hard groups to intercept) were sampled. In total, 19,713 people were counted entering across all locations and seasons (see Table 2). Of these, 1109 (5.6%) were on bikes and 76 (0.4%) were horse riding. Our interview data reflect similar proportions, with 5.6% either off-road cycling or road cycling and 0.6% horse riding.

5.14   Visitor route data collected here can be complimented and compared with other individual route recording applications. One of the more commonly used and easily viewable is Strava, where users route data can be freely viewed as heatmaps[13]. The Strava maps of routes are obviously different. Strava route maps show concentrated access along key paths, but also low levels of access along minor paths and open heath – something perhaps less

13 https://www.strava.com/heatmap#10.95/-1.67847/50.86711/hot/all

noticeable in our data. This may be due to the more accurate routes recorded from GPS and some interviewees in our surveys may also have been reluctant to admit their route had deviated from a dedicated route.

5.15   However, based on our experience from visitor surveys at other locations, such differences are not unexpected. To a degree this will be because these visitors are less well represented (e.g. difficulties in stopping cyclists and runners) and diluted amongst other visitors in our maps. But also, because Strava data are focused to a small community of more dedicated recreational users. Strava states a high proportion of the routes recorded are commutes (c.40%) and furthermore refers to users as "athletes". For example, the average distance cycled in a year for Strava users was 829 km (for men) or 425 km (for women)[14]. In comparison, UK national data suggested people who cycle make an average of 15 trips, totalling 85 km in a year[15]. Clearly Strava does well to target and record information on this higher level of "athlete", but these are likely to be only a proportion of the users of the New Forest. In recent interviews at Cannock Chase, Strava was used by a relatively small proportion of cyclists - just 12.5% (Panter & Liley, 2019). However, this is much higher than we have observed in the New Forest (3% of off-road cyclists), and in this study we note runners were more commonly using the app (6%).

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[14] See https://keyassets.timeincuk.net/inspirewp/live/wp-content/uploads/sites/2/2017/12/Strava-Year-in-Sport-UK.pdf
[15] See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/674503/walking-and-cycling-statistics-england-2016.pdf

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Appendix 1: Questionnaire

www.footprint-ecology.co.uk

Good morning/afternoon. I am conducting a survey on behalf of a number of local authorities who are interested in gathering the views of people who enjoy time out here in the New Forest. Can you spare me a few minutes please?

Q1 ...

○ **Have you travelled directly from your home today**... *if no*

○ **Are staying away from home with friends or family** ... *if no*

○ **Are you staying away from home, for example in a 2nd home, mobile home, camping or on holiday**

○ If none of the above, **How would you describe your visit today?**

Further details

[   ]

Q2 **What is the main activity you are undertaking today?** *Do not prompt. Follow with:* **Are there any other activities you or other members in your group are undertaking today?** *Tick one main activity only and tick as many other activities as the interviewee gives in the 'other' column.*

	Main Activity	Other
Dog walking/exercising dogs	☐	☐
Walking	☐	☐
Running	☐	☐
Cycling off-road/mountain biking	☐	☐
Road cycling	☐	☐
Bird/Wildlife watching	☐	☐
Fishing	☐	☐
Enjoying the view/picnic	☐	☐
Photography	☐	☐
Model aircraft	☐	☐
Meeting up with friends	☐	☐
Commercial dog walking	☐	☐
Visiting cafe/pub	☐	☐
Other, please detail:	☐	☐

Further details:

[   ]

Q3 **Over the past year, roughly how often have you visited the New Forest landscape of woodland and heathland?** *Tick closest answer, single response only. Do not prompt..*

○ More than once a day (365+ visits a year)
○ Daily (300-365 visits)
○ Most days (180-300 visits)
○ 1 to 3 times a week (40-180 visits)
○ 2 to 3 times per month (15-40 visits)
○ Once a month (6-15 visits)
○ Less than once a month (2-5 visits)
○ Don't know
○ First visit
○ Other, please detail

Further details:

[ ]

Q4 **How long have you spent / will you spend out today, visiting the heathland and woodland of the New Forest?** *Single response only. Tick closest.*

○ Less than 30 minutes
○ Between 30 minutes and 1 hour
○ 1-2 hours
○ 2-3 hours
○ 3-4 hours
○ 4 hours +

Further details

[ ]

Q5 **Do you tend to visit this location more at a particular time of year for [***insert given activity***]?** *Multiple answers ok.*

☐ Spring (Mar-May)
☐ Summer (Jun-Aug)
☐ Autumn (Sept-Nov)
☐ Winter (Dec-Feb)
☐ Equally all year
☐ Don't know
☐ First visit

Q6 **What form of transport did you used to get here today?** *Multiple responses possible. Record all transport used (e.g. train and bike)*

☐ Car / van
☐ On foot
☐ Bicycle
☐ Train
☐ Bus
☐ Other, please detail

Further details:

[ ]

Q7 **Why did you choose to visit this specific location today, rather than another part of the New Forest?** *Tick all responses given. Do not prompt, tick closest answers. Use text box for answers that cannot be categorised and for further information.*

Don't know / others in party chose ○

Close to home ○

No need to use car ○

Quick & easy travel route ○

Good/easy parking ○

Particular facilities ○

Refreshments/cafe/pub ○

Choice of routes ○

Feels safe here ○

Quiet, with no traffic noise ○

Not many people ○

Scenery / variety of views ○

Rural feel / wild landscape ○

Openess/wide ope spaces ○

Habit / familiarity/previous experience ○

Good for dog/ dog enjoys it ○

Ability to let dog off lead ○

Closest place to take dog ○

Closest place to let dog safely off lead ○

Appropriate place for activity ○

Suitability of area in given weather conditions ○

Particular wildlife interest (including trees) ○

Presence of water ○

For a change / variety ○

Other, please detail ○

Further details:

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Now I'd like to ask you about your route today. Looking at the area shown on this map, can you show me where you started your visit today, the finish point and your route please. Probe to ensure route is accurately documented. *Use **P** to indicate where the visitor parked, **E** to indicate the start point and **X** to indicate the exit. Mark the route with a line; a solid line for the actual route and a dotted line for the expected or remaining route. If walking from home/holiday accomodation etc. then start the route at that point.*

Q8   **Is / was your route today the normal length when you visit here for [***insert given activity***]?** *Tick closest answer, do not prompt. Single response only.*

○ Yes, normal

○ Much longer than normal

○ Much shorter than normal

○ Not sure / no typical visit

○ First visit

Q9   **What, if anything, determined your route today?** *Tick closest answers. Multiple responses ok. If interviewee struggles, prompt with: "***What influenced where you went today?***"*

☐ Weather

☐ Daylight

☐ Time

☐ Other users (avoiding crowds etc)

☐ Group members (eg kids, less able)

☐ Selecting muddy paths/tracks

☐ Avoiding muddy tracks / paths

☐ Followed a marked trail/route

☐ Previous knowledge of area / experience

☐ Activity undertaken (eg presence of dog or needing to stick to cycle trails, add details)

☐ Location of pub/cafe/refreshments

☐ Passing public toilets

☐ Viewpoint / Feature

☐ Lost way/got lost

☐ Other, please detail

Further details:

I'd now like to ask about information you use to plan your visit to the New Forest.

Q10   Ask the following in turn, note order randomised.

	Yes	No	Don't know/unsure
Did you use any <u>websites</u> when planning your visit today?	○	○	○
Did you use any <u>social media</u> when planning your visit today?	○	○	○
Did you use a <u>smartphone app</u> when planning your visit today?	○	○	○
Did you use any <u>maps (online or paper)</u> when planning your visit today?	○	○	○
Did you use any <u>leaflets</u> when planning your visit today?	○	○	○
Did you follow any <u>recommendations from friends or family</u> to plan your visit today?	○	○	○
Did you follow any recommendations from <u>a visitor centre or information centre</u> to plan your visit today?	○	○	○

Q11   **You indicated that you used a website to plan your visit today, was it one of these websites?** *Use show cards, as potential for confusion with the different websites. [Routed from above Q]*

☐ National Park website

☐ Forestry Commission website

☐ thenewforest.co.uk

☐ Other

Other sites/further details

_____

Q12   **You indicated that you used social media to plan your visit today, which social media did you use?** *[Routed from above Q] Use further details to record particular feeds, channels or content.*

☐ Twitter

☐ Facebook

☐ Instagram

☐ Other

Further details, including particular feeds/pages, channels, content etc.

_____

Q13   **You indicated that you have used a smartphone app to plan your visit today. Which apps did you use?** *[Routed from above Q]*

_____

Q14 **You indicated that you used leaflets to plan your visit today. Which leaflets did you use?** *[Routed from above Q]*

Q15 **You indicated that a visit to a visitor or information centre helped you plan your visit today, which centre did you visit?** *[Routed from above Q]*

Q16 **Are you aware of any wildlife habitats or species that could be affected by people coming here? If so, can you name them?** *Do not prompt. Tick any groups mentioned.*

☐ Not aware of any
☐ Yes, but can't name or vague
☐ heathland mentioned
☐ woodland habitats mentioned
☐ water bodies/streams mentioned
☐ trees mentioned, e.g. old trees
☐ breeding birds in general mentioned
☐ birds of prey/raptors mentioned
☐ nightjar, woodlark or Dartford warbler specifically mentioned
☐ waders specifically mentioned ('wader', 'curlew', 'lapwing', 'snipe' etc.)
☐ deer specifically mentioned
☐ ponies/grazing animals mentioned
☐ traditional management/commoning mentioned
☐ Other (give details)

Further details:

I would now like to ask about other places outside the New Forest that you also visit for [*given activity*].

Q17   **What proportion of your weekly visits for [given activity] take place within the New Forest woodland and heathland lanscape areas, compared to other places outside the New Forest. Can you give a rough percentage?** *Do not prompt. Only asked of those on a day visit/short visit from home.*

◯ All take place here

◯ 75% or more

◯ 50-74%

◯ 25-49%

◯ less than 25%

◯ Not sure/don't know/first visit

Please could you tell me the name of another location away from the New Forest woodland and heathland that you also visit for [given activity]? Please name the location you visit most frequently. *Record one site only. Record names as carefully as possible. Question only asked of those who visit other places.*

Q18   Name of Site

| |
| |

Q19   **If footpaths and rights of way were improved around the New Forest, but away from the woodland and heathland, do you think you would be likely to use them more?** *Do not prompt, tick closest answer.*

◯ Not sure/Don't know/can't tell

◯ Yes

◯ Maybe

◯ No

Q20   **If a new country park was created for [given activity] near the New Forest, but away from the woodland and heathland, do you think you would be likely to use it?** *Do not prompt, tick closest answer.*

◯ Not sure/Don't know/can't tell

◯ Yes

◯ Maybe

◯ No

Q21 **What features would you like to see at such a new country park in order for it to draw [given activity]?** *Do not prompt. Tick any options as relevant.*

☐ cafe
☐ visitor centre
☐ toilets
☐ sufficient parking
☐ free parking
☐ extensive/good walking routes
☐ dedicated cycling routes
☐ bike hire
☐ dedicated horse riding routes
☐ off-lead areas for dogs
☐ play facilities for children
☐ good views/scenery
☐ woodland
☐ open water
☐ Other (give details)

Further details:

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Q22 **Finally, what is your full home postcode?** *This is an important piece of information, please make every effort to record correctly.*

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Q23 *If visitor is unable or refuses to give postcode:* **What is the name of the town or village village where you live?**

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Q24 *If visitor is on holiday ask:* **Which town/village/campsite are you staying in?** *[Routed from above Q]*

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Q25 **Do you have any further comments or general feedback about your visit and access to this area?**

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That is the end. Thank you very much indeed for your time.

Q26 **TO BE COMPLETED AFTER INTERVIEW FINISHED.**

Surveyor initials	
Survey location code	
Map Reference Number	
Gender of respondent	
Total number in interviewed group	
Total males	
Total females	
Total minors (under 18)	
Total number of dogs	
Number of dogs seen off lead	

Q27 **Did the interviewee appear to be part of an organised group, e.g. a tour, guided party, group walk, DoE etc.**

◯ Yes, interviewee part of an organised group

Q28 **Did the interviewee struggle with answering questions because English was not their first language?** Tick yes if you feel this may have influenced the responses.

◯ Yes, interviewee struggled because English was not their first language

Q29 **Surveyor comments**. *Note anything that may be relevant to the survey, including any changes to the survey entry that are necessary, eg typos/mistakes/changes to answers/additional information.*

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Appendix 2: Tally count model output

P values are rounded to 3 decimal places, significance level is *=0.01-0.05, **=0.01-0.001 and ***=<0.001

Category	Parameter	Coefficent estimate	Standard error	z value	p - value	Significance level
	(Intercept)	-2.023	0.225	-9.002	<0.001	***
Cloud cover	Seven to eight eighths	-0.109	0.031	-3.500	<0.001	***
	None	0.145	0.045	3.206	0.001	**
	Two eighths or less	0.074	0.037	1.989	0.047	*
Day type	Weekend	0.798	0.047	16.837	<0.001	***
Day type:Season interaction	Weekend:Summer	-0.281	0.045	-6.269	<0.001	***
Day type:Time period interaction	Weekend:Early morning	-0.545	0.067	-8.128	<0.001	***
	Weekend:Late afternoon	-0.161	0.053	-3.011	0.003	**
	Weekend:Late morning	-0.145	0.054	-2.685	0.007	**
Location	Ashurst	1.863	0.225	8.295	<0.001	***
	Balmer Lawn	1.350	0.229	5.908	<0.001	***
	Beachern Wood	1.244	0.232	5.356	<0.001	***
	Blackwater	0.805	0.225	3.580	<0.001	***
	Blackwell Common	0.919	0.264	3.477	0.001	***
	Bolderwood	0.917	0.222	4.136	<0.001	***
	Boltons Bench	1.594	0.232	6.860	<0.001	***
	Brownhills	0.975	0.276	3.534	<0.001	***
	Burbush Hill	2.588	0.218	11.862	<0.001	***
	Deerleap	1.508	0.215	7.021	<0.001	***
	Dibden Inclosure	1.323	0.224	5.895	<0.001	***
	Fritham	1.595	0.223	7.138	<0.001	***
	Hatchet Pond	0.889	0.234	3.805	<0.001	***
	Hawkhill	0.837	0.247	3.385	0.001	***
	Holmsley	0.990	0.273	3.627	<0.001	***
	Longdown	1.890	0.238	7.951	<0.001	***
	Longslade Bottom	1.053	0.255	4.136	<0.001	***
	Marchwood Inclosure	1.682	0.223	7.535	<0.001	***
	Minstead Road	-2.065	0.665	-3.104	0.002	***
	Phone box on Woodlands Road	2.397	0.248	9.683	<0.001	***
	Rockford Common	1.466	0.222	6.602	<0.001	***
	Rufus Stone	0.895	0.243	3.683	<0.001	***
	Smugglers Road	2.043	0.250	8.177	<0.001	***

Category	Parameter	Coefficent estimate	Standard error	z value	p - value	Significance level
Location	Stoney Cross	-1.728	0.379	-4.564	<0.001	***
	Telegraph Hill	2.374	0.246	9.656	<0.001	***
	Turf Hill	1.059	0.236	4.486	<0.001	***
	Vereley	1.403	0.232	6.058	<0.001	***
	West Wellow	2.161	0.232	9.327	<0.001	***
	Wilverley Pit	1.030	0.169	6.078	<0.001	***
	Ashley Walk	0.809	0.272	2.981	0.003	**
	Brock Hill	0.740	0.240	3.077	0.002	**
	Burley Cricket	0.685	0.246	2.791	0.005	**
	Cadman's Pool	0.704	0.242	2.912	0.004	**
	Roundhill	-0.763	0.284	-2.691	0.007	**
	Setley Pond	0.719	0.244	2.944	0.003	**
	Shatterford	0.697	0.246	2.829	0.005	**
	Tilery Road	0.721	0.248	2.910	0.004	**
	Whitefield Moor	0.665	0.222	2.991	0.003	**
	Bramble Hill Walk	0.655	0.328	1.993	0.046	*
	King's Hat	0.589	0.248	2.381	0.017	*
	Linford Bottom	0.548	0.228	2.407	0.016	*
	Mill Lawn	0.552	0.276	2.002	0.045	*
	Racecourse View	0.707	0.307	2.299	0.021	*
	Wilverley Inclosure	-0.605	0.243	-2.491	0.013	*
Location:Season interaction	Anderwood:Summer	1.534	0.253	6.056	<0.001	***
	Andrews Mare:Summer	1.183	0.275	4.304	<0.001	***
	Ashley Walk:Summer	0.980	0.261	3.757	<0.001	***
	Balmer Lawn:Summer	1.146	0.203	5.647	<0.001	***
	Beachern Wood:Summer	0.819	0.209	3.909	<0.001	***
	Bolderwood:Summer	0.927	0.196	4.725	<0.001	***
	Boltons Bench:Summer	1.044	0.206	5.068	<0.001	***
	Fritham:Summer	-1.041	0.218	-4.769	<0.001	***
	Linford Bottom:Summer	0.715	0.202	3.535	<0.001	***
	Wilverley Inclosure:Summer	1.232	0.218	5.652	<0.001	***
	Ashurst:Winter	-0.865	0.222	-3.903	<0.001	***
	Beaulieu Heath:Winter	-1.516	0.252	-6.010	<0.001	***
	Bolderwood:Winter	-0.789	0.214	-3.691	<0.001	***
	Deerleap:Winter	-1.141	0.208	-5.494	<0.001	***
	Dibden Inclosure:Winter	-0.808	0.206	-3.919	<0.001	***
	Fritham:Winter	-1.109	0.227	-4.881	<0.001	***
	Hatchet Pond:Winter	-1.101	0.247	-4.450	<0.001	***

Category	Parameter	Coefficent estimate	Standard error	z value	p - value	Significance level
Location:Season interaction	Longslade Heath:Winter	-2.245	0.422	-5.314	<0.001	***
	Marchwood Inclosure:Winter	-0.762	0.212	-3.590	<0.001	***
	Ocknell Pond:Winter	-1.919	0.518	-3.705	<0.001	***
	Rockford Common:Winter	-0.799	0.210	-3.798	<0.001	***
	Whitefield Moor:Winter	-1.214	0.221	-5.488	<0.001	***
	Wilverley Inclosure:Winter	0.737	0.222	3.320	0.001	***
	Brock Hill:Summer	0.639	0.225	2.841	0.004	**
	Deerleap:Summer	-0.523	0.195	-2.685	0.007	**
	Hatchet Pond:Summer	0.697	0.217	3.212	0.001	**
	Janesmoor Pond:Summer	0.682	0.231	2.952	0.003	**
	Beachern Wood:Winter	-0.723	0.231	-3.135	0.002	**
	Cadman's Pool:Winter	-0.748	0.265	-2.822	0.005	**
	Holmsley:Winter	-1.084	0.362	-2.992	0.003	**
	Smugglers Road:Winter	-0.733	0.259	-2.827	0.005	**
	Brownhills:Summer	0.588	0.275	2.140	0.032	*
	Longdown:Summer	0.538	0.224	2.400	0.016	*
	Phone box on Woodlands Road:Summer	0.526	0.236	2.230	0.026	*
	Shatterford:Summer	0.495	0.240	2.063	0.039	*
	Abbots Well:Winter	-0.686	0.285	-2.407	0.016	*
	Burbush Hill:Winter	-0.403	0.195	-2.065	0.039	*
	Janesmoor Pond:Winter	-0.623	0.256	-2.435	0.015	*
	Moonhills:Winter	-0.555	0.241	-2.299	0.022	*
	Rufus Stone:Winter	-0.707	0.287	-2.458	0.014	*
	Tilery Road:Winter	0.474	0.233	2.032	0.042	*
Rainfall	More than three quarters of an hour	-0.412	0.097	-4.263	<0.001	***
	None	0.248	0.072	3.441	0.001	***
	Less than 15 minutes	0.213	0.074	2.867	0.004	**
Season	Winter	0.325	0.168	1.941	0.052	*
Season:Time period interaction	Winter:Late afternoon	0.324	0.066	4.901	<0.001	***
	Winter:Late morning	-0.182	0.055	-3.329	0.001	***
Temperature	Hot	0.261	0.058	4.500	<0.001	***
	Warm	0.234	0.038	6.083	<0.001	***

Category	Parameter	Coefficent estimate	Standard error	z value	p - value	Significance level
Time period	Early morning	-0.630	0.068	-9.235	<0.001	***
Time period	Late afternoon	-0.641	0.059	-10.767	<0.001	***
	Late morning	0.306	0.051	5.975	<0.001	***

Category	Parameter	Coefficent estimate	Standard error	z value	p - value	Significance level

Appendix 3: Totals by survey point

Grey shading in last four columns highlights the 5 cells with the highest values.

Survey location	No. interviews				Average group size	Average number minors	Average number of dogs per group	% dogs seen off lead
	Spring	Summer	Winter	Total				
Abbots Well	36	23	49	108	2.1	0.2	0.9	68
Anderwood	24	13	16	53	3.4	0.7	0.7	31
Andrews Mare	29	17	18	64	2.1	0.2	1.4	70
Ashley Walk	34	19	32	85	2.3	0.2	0.8	56
Ashurst	48	24	38	110	1.9	0.3	0.7	29
Balmer Lawn	49	24	43	116	3	0.8	0.4	30
Beachern Wood	40	25	34	99	2.8	0.3	0.6	56
Beaulieu Heath	36	15	25	76	2.6	0.8	1	68
Blackwater	51	25	60	136	2.6	0.4	0.5	20
Blackwell Common	31	18	39	88	1.7	0.2	1.5	73
Bolderford Bridge	28	36	40	104	2.6	0.7	0.5	72
Bolderwood	42	22	42	106	3.1	0.8	0.4	21
Boltons Bench	34	27	38	99	2.4	0.5	0.4	64
Bramble Hill Walk	14	7	15	36	2	0.2	0.9	64
Brock Hill	23	23	39	85	2.4	0.6	0.4	42
Brownhills	37	19	44	100	1.7	0.1	1.1	44
Burbush Hill	46	19	46	111	2	0.2	0.9	37
Burley Cricket	20	15	28	63	2.4	0.4	0.4	29
Cadmans Pool	40	16	22	78	2.2	0.3	0.9	62
Clayhill Heath	20	12	14	46	2.2	0.2	0.5	60
Deerleap	67	24	36	127	1.9	0.4	1	71
Dibden Inclosure	57	31	48	136	1.6	0.2	1.4	60
Fritham	40	24	32	96	2.2	0.3	0.4	36
Hatchet Pond	50	23	27	100	2.5	0.5	0.4	71
Hawkhill	34	15	29	78	2.1	0.3	0.8	54
Heath r'bout Pegasus crossing	56	25	36	117	1.6	0.2	0.7	67
Hincheslea Moor	18	11	31	60	1.7	0.2	0.9	51
Holmsley	23	14	16	53	2.4	0.4	0.9	43
Horseshoe Bottom	47	22	43	112	1.8	0.2	1.5	78
Janesmoor Pond	24	20	39	83	2.3	0.3	0.7	68
Kings Hat	47	10	39	96	1.8	0.2	1.3	66
Knightwood Oak	23	20	27	70	2.7	0.5	0.5	49
Linford Bottom	47	23	37	107	2.1	0.3	1.2	54
Longcross	28	12	23	63	2	0.2	1	70
Longdown	62	31	51	144	1.6	0.2	1.3	67
Longslade Heath	30	14	7	51	1.7	0.1	1.4	58
Marchwood Inclosure	70	31	69	170	1.6	0.2	1.2	67

Survey location	No. interviews				Average group size	Average number minors	Average number of dogs per group	% dogs seen off lead
	Spring	Summer	Winter	Total				
Mill Lawn	16	9	17	42	2.8	0.6	0.9	72
Minstead Road	8	4	7	19	2	0.3	0.3	67
Moonhills	58	16	30	104	1.7	0.2	1.3	82
Norley Wood	32	8	17	57	1.7	0.1	1.2	68
Ocknell Pond	10	9	9	28	2.2	0.6	0.8	74
Phone box on Woodlands Road	45	25	38	108	1.8	0.3	0.9	56
Pig Bush	37	15	24	76	2	0.2	1	64
Racecourse View	40	10	19	69	1.6	0.1	0.8	62
Rockford Common	48	26	42	116	1.9	0.2	1.3	60
Roundhill	21	25	33	79	1.8	0.2	0.1	44
Rufus Stone	26	18	18	62	2.6	0.4	0.3	56
Setley Pond	45	26	28	99	1.9	0.2	1.2	76
Shatterford	37	18	35	90	2.1	0.2	0.5	58
Smugglers Road	46	17	32	95	1.4	0.1	1.3	35
Stoney Cross	15	10	12	37	1.9	0.4	1.2	57
Telegraph Hill	30	15	35	80	2.1	0.3	0.8	71
Tilery Road	31	19	27	77	2.5	0.6	0.5	81
Turf Hill	53	22	39	114	1.4	0	1.3	71
Vereley	28	12	34	74	2.4	0.6	0.9	28
West Wellow	59	27	50	136	1.9	0.2	1.2	55
Whitefield Moor	41	23	29	93	2.6	0.6	0.6	70
Wilverley Inclosure	34	30	52	116	2	0.2	1.2	54
Wilverley Pit	50	24	55	129	1.6	0.1	1.3	61
Total	**2215**	**1157**	**1955**	**5326**	**2.1**	**0.3**	**0.9**	**60**

Appendix 4: Other sites visited (from Q18)

All other, alternative sites named by at least 5 interviewees are listed below.

Site	Number of interviewees
Hengistbury Head	96
Lepe Country Park	86
Purbeck	61
Lymington Marshes	54
Highcliffe beach	52
Southampton Common	45
South Downs	44
Bournemouth beach	40
Barton-on-sea	39
Mudeford	38
Highcliffe	38
Moors Valley Country Park	32
Testwood Lakes	31
Milford-on-sea	27
Barton-on-sea beach	23
Keyhaven	23
Ringwood Forest	21
Hythe	21
Avon Beach	21
Dorset	21
Lymington	20
Romsey	18
Avon Heath Country Park	17
Totton	16
Calshot	16
Lake District	15
Dibden Purlieu	15
Bournemouth	14
Studland	13
Salisbury	13
Winchester	12
Southampton	12
Milford-on-sea beach	11
Wareham Forest	11
Cranborne Chase	11
Martin Down	10
Calshot beach	10
Hamble	10
Friars Cliff beach	10
Swanage	9
Southbourne beach	9

Site	Number of interviewees
Royal Victoria Country Park	9
Farley Mount Country Park (Winchester)	9
Christchurch	9
Dartmoor	9
Sandbanks	8
Queen Elizabeth Country Park (Petersfield)	8
St Catherine's Hill (Christchurch)	8
Pennington Marshes	8
Test Valley	8
Lee-on-Solent	8
Avon Valley	8
Isle of Wight	8
Keyhaven Marshes	8
Bentley Wood	8
Steamer Point	7
Meon Valley	7
Salisbury Plain	7
Manor Farm Country Park	7
Marchwood	7
Southbourne	7
Hurst Spit	7
Downton	7
Ringwood	6
Mottisfont	6
Studland beach	6
Lordswood (Southampton)	6
Wales	6
St Catherine's Hill (Winchester)	6
Southsea	6
Lakeside Country Park	6
Fordingbridge	6
Blashford Lakes	6
Hundred Acres Wood (Wickham)	6
Hatchet Pond	6
Cornwall	6
Southampton Sports Centre	5
Poulner Lakes	5
New Milton	5
Nursling	5
Stockbridge	5
Hythe Marina	5
Christchurch beach	5
Kingston Lacy	5
Jurassic Coast	5
Hordle	5

Site	Number of interviewees
Ampfield Wood	5

Appendix 5: Summary statistics for visitor origins (distance from home postcode to survey point, 'as the crow flies') by survey point

Survey point	N	Mean (+1 SE)	Median	Range	75%
Norley Wood	54	16.1 (+4.19)	4.83	0.62-130.14	10.65
Setley Pond	94	25.22 (+7.7)	4.14	0.22-622.08	8.82
Brownhills	95	17.39 (+4.11)	5.59	0.46-223.32	8.15
Beaulieu Heath	70	40.33 (+8.54)	10.01	2.76-344.38	27.99
Horseshoe Bottom	102	27.31 (+6.77)	6.61	1.87-504.96	8.86
Wilverley Inclosure	108	20.83 (+3.99)	6.77	2.59-248.18	12.25
Longslade Heath	47	29.9 (+13.3)	5.8	0.7-594	10.4
Holmsley	44	33.31 (+7.98)	8.06	2.29-222.43	22.31
Wilverley Pit	121	13.83 (+2.4)	6.38	2.77-170.54	9.22
Hincheslea Moor	55	30.52 (+6.38)	7.98	2.64-175.17	19.64
Blackwell Common	84	10.91 (+5.36)	1.64	0.6-396.47	2.9
Hatchet Pond	87	54.41 (+8.45)	19.96	0.43-393.11	71.9
Burbush Hill	105	33.45 (+6.12)	7.4	1.84-357.85	13.66
Hawkhill	71	25.42 (+5.81)	8.9	2.28-238.09	13.43
Moonhills	98	13.19 (+3.13)	3.84	1.01-151.77	5.17
Beachern Wood	91	43.88 (+7.11)	10.41	0.24-314.97	71.68
Whitefield Moor	82	56.96 (+7.85)	19.01	1.33-272.31	89.42
Burley Cricket	59	66.25 (+8.94)	25.09	0.23-317.63	119.47
Balmer Lawn	104	72.47 (+6.24)	61.17	0.63-284.76	108.5
Tilery Road	69	54.97 (+8.79)	22.15	0.28-456.58	99.66
Mill Lawn	39	18.76 (+4.17)	10.37	0.76-120.01	14.29
Smugglers Road	91	13.1 (+3.85)	3.58	1.69-309.54	9.11
Bolderford Bridge	92	80.59 (+7.78)	60.34	1.64-288.13	132.82
Blackwater	111	69.15 (+9.09)	22.7	3.11-610.03	117.99
Pig Bush	73	28.37 (+6.28)	7.14	1.78-272.84	11.39
Vereley	69	30.75 (+4.92)	14.78	0.78-163.1	33.99
Kings Hat	92	15.39 (+3.87)	5.07	2.19-266.46	9.27
Anderwood	49	36.1 (+6.81)	16.93	3.65-174.91	25.87
Dibden Inclosure	131	5.47 (+2.04)	2.13	0.76-248.83	3.48
Brock Hill	73	64.76 (+9.38)	20.93	3.49-334.8	107.01
Heath roundabout Pegasus crossing	105	8.09 (+3.69)	0.69	0.07-266.29	1.32
Clayhill Heath	37	78.9 (+14)	75.2	1.8-471	112.7
Shatterford	80	45.06 (+9.32)	10.9	4.38-572.79	23.91
Knightwood Oak	58	78.1 (+11.2)	39.8	4.1-460.8	122.3
Linford Bottom	102	18.94 (+7.54)	3.21	0.23-743.59	14.38
Marchwood Inclosure	161	7.04 (+1.62)	2.79	0.47-173.62	3.62
Boltons Bench	84	43.85 (+7.78)	14.38	0.31-311.01	39.66
Rockford Common	107	11.29 (+2.43)	2.98	1.41-231.02	13.59
Racecourse View	63	27.8 (+10.2)	0.3	0.1-558.1	12.1
Bolderwood	85	72.51 (+8.36)	28.36	4.57-439.16	125.78

Survey point	N	Mean (±1 SE)	Median	Range	75%
Longdown	138	7.9 (+2.13)	4.45	1.06-275.8	5.94
Deerleap	118	9.32 (+1.98)	4.71	0.5-145.54	7.45
Ashurst	104	7.56 (+1.52)	3.46	0.09-97.27	7.52
Minstead Road	16	82.6 (+21.9)	50.4	0.5-299.9	152.5
Phone box on Woodlands Road	103	10.78 (+3.25)	2.88	0.13-203.22	5.2
Andrews Mare	59	23.7 (+3.45)	16.95	0.73-108.54	22.57
Ocknell Pond	23	49.9 (+17.5)	19.8	6.4-361.4	38.2
Cadmans Pool	72	33.41 (+4.76)	17.78	3.52-212.91	32.41
Stoney Cross	32	41.4 (+10.4)	15.7	4.4-218.6	31.2
Rufus Stone	53	99.6 (+15.6)	48.8	1.4-571.3	150.4
Abbots Well	100	29.85 (+5.78)	6.86	0.54-384.64	22.99
Janesmoor Pond	75	28.87 (+3.63)	18.49	0.62-138.8	28.77
Fritham	88	43.58 (+7.52)	20.24	0.27-564.72	55.2
Roundhill	69	25.11 (+3.58)	16.8	2.29-148.17	22.15
Longcross	58	29.19 (+5.53)	12.26	1.71-176.43	25.02
Bramble Hill Walk	32	31.05 (+7.32)	14.55	1.84-206.23	30.13
Ashley Walk	79	32.67 (+5.3)	15.43	1.83-264.89	29.95
Telegraph Hill	77	27.11 (+4.42)	14.19	2.49-180.01	25.33
Turf Hill	106	7.353 (+0.941)	3.831	0.879-57.404	5.834
West Wellow	127	14.91 (+4.38)	4.77	0.07-359.93	9.49

Appendix 6: Multivariate analysis to inform groupings

In order to derive the visitor groupings shown in Figure 20 (in the main body of the report above), we conducted a range of exploratory analysis. These are presented and described below and included here for completeness.

A range of metrics were calculated, initially summarised by survey point. These included the number of interviewees visiting from home, on a first visit, walking, living within less than 5km, with minors, visiting for scenery, using maps to inform their route. 'bird aware' reflects the response to the question 16 and whether the interviewee mentioned birds. The list of metrics is given in Figure 21, which shows a correlation matrix which identifies the strong positive and negative relationships between factors.
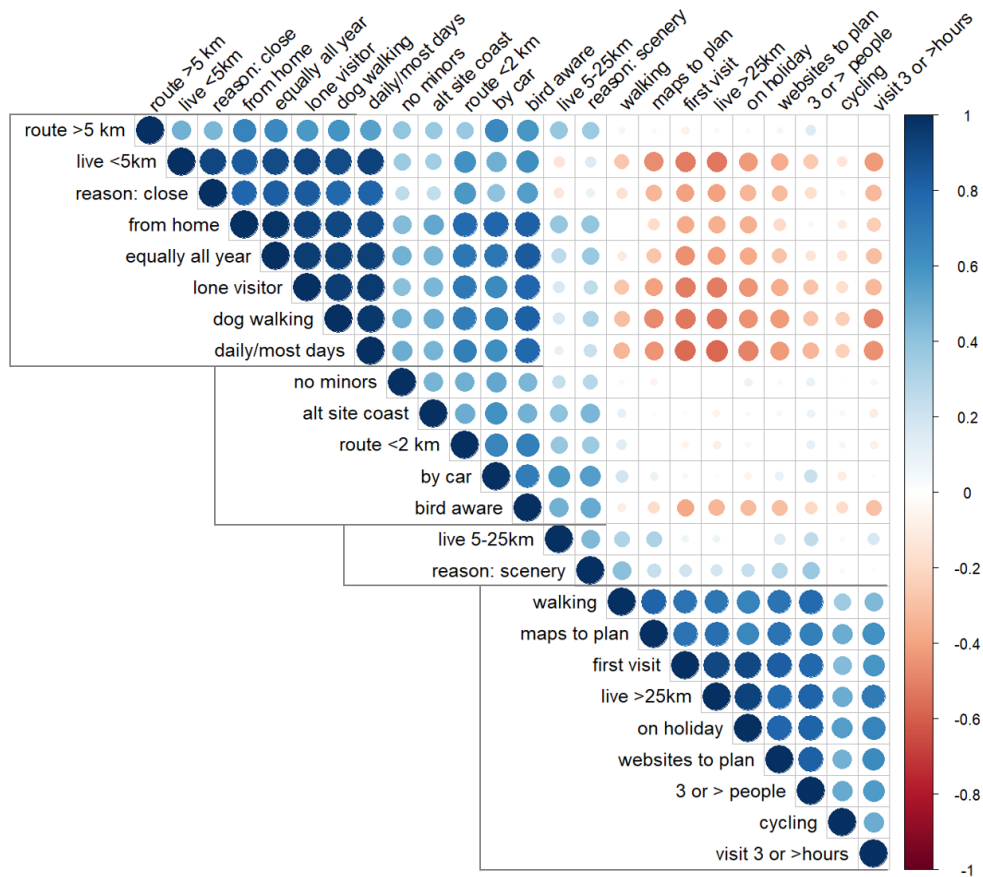
Figure 21: Correlation matrix of a variety metrics with data grouped by survey point (n=60). For each pair the size of the circle indicates the strength of the relationship (larger circle shows a stronger relationship). Blue to red shading indicates the direction of the relationship (blue shows a positive correlation, while red shows a negative correlation). Metrics on columns and rows are grouped by hierarchical clustering to identify metrics which were similar in their relationship to each other (general pattern of clusters indicated by grouped boxes).

The individual metrics in Figure 21 are sorted by hierarchical clustering, which show a rough gradient from frequent, close proximity visitors (living within 5km), who often visit for dog walking to infrequent, visitors from further away (more than 25 km) often cycling or walking. Groupings identified by the clustering are shown by boxes and highlight these two divergent groupings, and a further two groupings in between. The groupings also highlight other interesting correlates; for example the use of websites to plan by those coming from further away.

The multiple visitor metrics for each survey point were used in a weighted Principal Component Analysis (PCA), with weights as the number of interviewees for each survey point. This kind of analysis allows complex, multi-variate data to be summarised. In particular we wanted to identify whether survey points could be grouped (based on their visitor use) and which factors were most useful to identify particular visitor groups.

The PCA output gave a first set of values (principal component), which explained 45% of the variation in the data, and second set of values which explained 31% of the variation. These two principal components (which explain a combined 76% of the variation) are shown for each survey point in Figure 22.
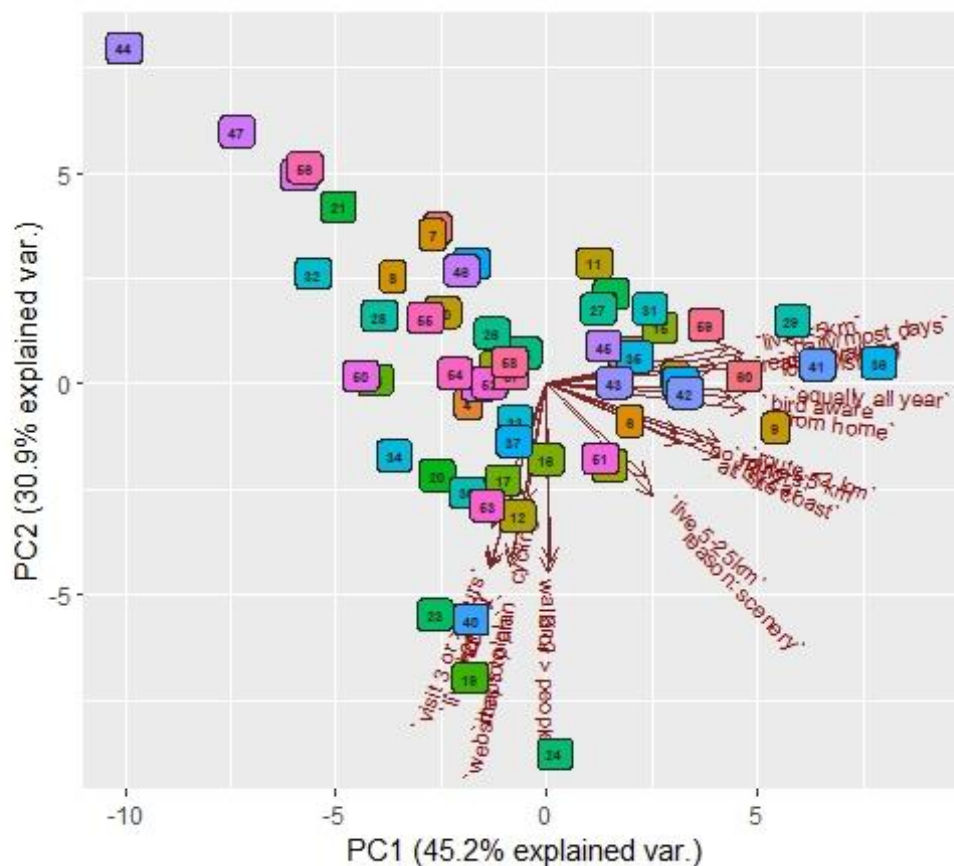

Figure 22: Survey point locations plotted based on the PCA output values of PC1 and PC2 (Principal Component). Values for each randomised coloured square are the survey point location number. Red directional arrows indicate the direction each labelled visitor metric.

The directional factors in Figure 22 show that there are two main divergent groups. Survey points with positive values for PC1 (e.g. location 38 Rockford Common and 31 Longdown) were characterised by frequent, local, short duration, dog walkers. Those survey points with negative values for PC2 (e.g. location 24, Blackwater and location 19 Balmer Lawn) were characterised by infrequent, long duration, cyclists and walkers from further away.

This is because many survey locations seem to have mixes of each visitor type. Some do however appear to stand out, for example point 24, Blackwater had one of the highest proportion of walkers (62%) and the lowest proportion of frequent visitors (13% daily/most days). At Blackwater the walkers are mostly family groups following the way-marked trails.

Overall the large number of survey points and subtle gradient meant it was hard to identify clear groupings. However, the PCAs were useful in comparison with survey point factors such as the number of houses within a 10 minute travel time (by car) or distance from the central point of the New Forest (Figure 23). Using these data it is possible to see that the points nearest to the edge of the New Forest SAC/SPA/Ramsar tend also to have the highest number of houses within 10 minutes travel time and it is these locations (with positive values of PC1) that the visitor data shows a high proportion of frequent, local visitors, visiting for a short duration and usually to walk a dog.
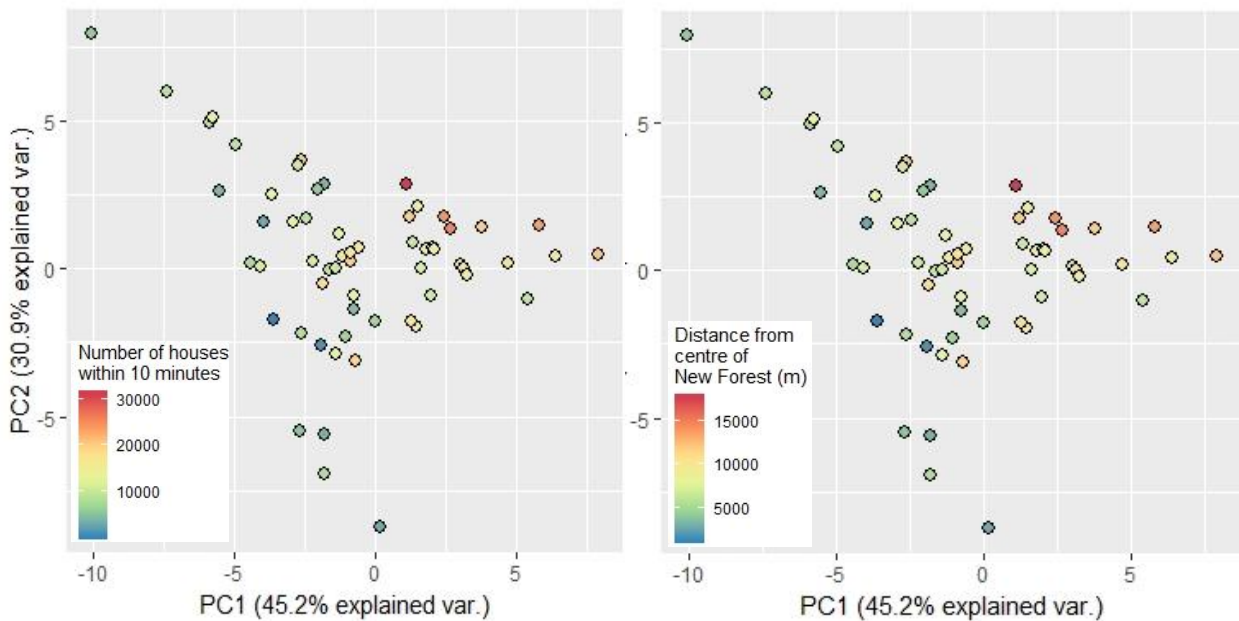

Figure 23: Repeated plots of the PCA in Figure 22, but with survey points categorised by the number of houses within a 10 minute travel time (by car) and the distance from the centre of the New Forest.

The linear distance between interviewees home postcode and the survey point was an important explanatory variable and also a continuous variable for each interviewee. This could therefore be used to group interviewees and produce metrics in the same manner as for survey point data, for example to identify what visit characteristics were associated with those who came from the shortest distances. To avoid the need for any weighting, as conducted in the survey point PCA, we grouped interviewees distance from home to survey point into 10 equal sized classes (n=487). The 10 equal classes were as follows; 0.1 - 1.7km ,1.7 - 2.9km, 2.9 - 4km, 4 - 5.6km, 5.6 - 7.8km, 7.8 - 11.1km,11.1 - 17.4km, 17.4 - 30.5km, 30.6 - 106km, 106.1 - 743.6km.

As with survey point interview data, a correlation matrix was first created – see Figure 24. The hierarchical clustering again identified the same two main groupings, shown by the boxes in Figure 24.
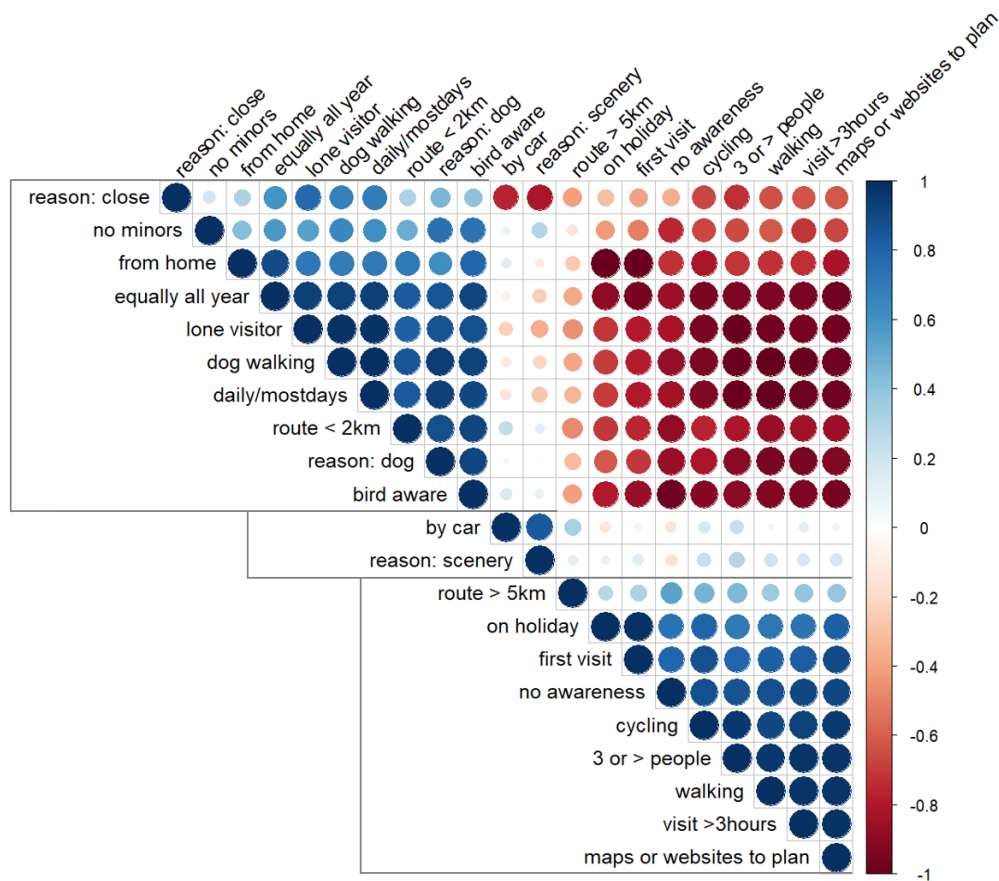

Figure 24: Correlation matrix of a variety metrics with data grouped by distance bands (n=10). Correlation pairs can be examined looking at the intersection of column and row. For each pair a sized circle indicates the strength of the relationship (larger circle shows a stronger relationship). Blue to red shading indicates the direction of the relationship (blue shows a positive correlation, while red shows a negative correlation). Metrics on columns and rows are grouped by hierarchical clustering to identify metrics which were similar in their relationship to each other (general pattern of clusters indicated by grouped boxes).

The PCA of interviewee data grouped by home postcode distance showed a clearer pattern than survey point grouping, and the gradient was clearly related to distance (for example the main reason for choosing where to go for those who travelled less than 1.7km was proximity to home), as shown in Figure 25. This showed only the variables relating to use of a car to visit and site choice motivated by scenery did not relate well to distance. All other metrics appeared strongly associated with the directional gradient created by the PCA. The difference in direction appeared to become separated between class 6 and 7 – around 11 km.
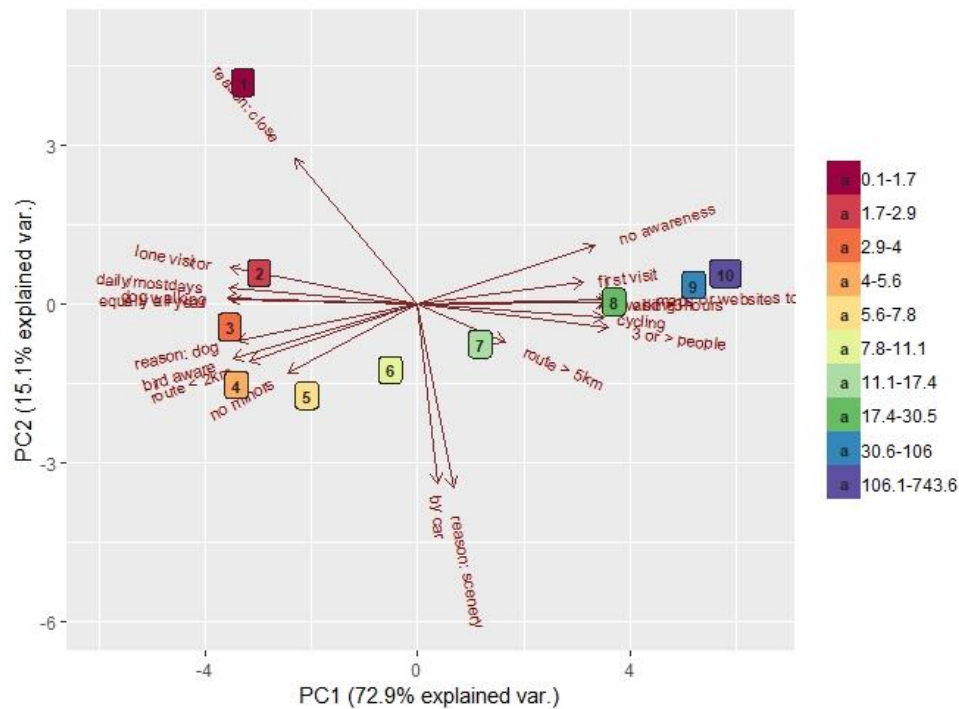

Figure 25: Visitor data metrics grouped into 10 distance bands plotted using the PCA output values of PC1 and PC2 (Principal Component). Values for points show the order and relate to the distance band values given in the legend (distance in km). Red directional arrows indicate the direction each labelled visitor metric.